

# TRANSPORTATION RESEARCH BOARD



## 2005 ANNUAL REPORT

TRANSPORTATION RESEARCH BOARD  
OF THE NATIONAL ACADEMIES



The mission of the Transportation Research Board is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, the Board facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation.



## THE NATIONAL ACADEMIES™

*Advisers to the Nation on Science, Engineering, and Medicine*

The nation turns to the National Academies—National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council—for independent, objective advice on issues that affect people’s lives worldwide. Established in 1916 under the congressional charter of the private, nonprofit National Academy of Sciences, the National Research Council—through volunteer advisory committees—brings the entire scientific and technical community to bear on national problems. The principal operating agency of both the National Academy of Sciences and the National Academy of Engineering, the National Research Council is administered jointly by the two academies and the Institute of Medicine.

The National Research Council has six major program units. One of these is the Transportation Research Board, which was organized in 1920 and is charged with promoting innovation and progress in transportation through research.

## DEAR SUPPORTER OF TRB

The letter to supporters in last year's Annual Report noted the uncertainty facing transportation agencies—and transportation research programs—as Congress was unable to complete a comprehensive reauthorization bill for the federal surface transportation programs that expired at the end of September 2003. Much of that uncertainty was removed in August when the President signed the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

SAFETEA-LU authorizes a substantial increase in federal funding for surface transportation research and establishes several new research and technology programs with great potential. Also noteworthy is the unprecedented attention that Congress devoted to research needs in hearings and staff briefings leading up to the final bill.

Continuing a trend from recent reauthorization cycles, Congress increased the level of direction about how and where to expend resources on research, through a combination of program designations and earmarks. This reduces the discretionary research funding available to the U.S. Department of Transportation's (DOT's) surface transportation agencies, and could affect support for TRB committees, conferences, workshops, and studies.

In the research management area, SAFETEA-LU is likely to expand TRB activities, at least for the next several years. The legislation authorizes a new strategic highway research program, a freight cooperative research program, and a pilot hazardous materials cooperative research program—all to be administered by the National Academy of Sciences through TRB. The act also authorizes U.S. DOT to employ TRB as appropriate in the administration of a new Surface Transportation Environment and Planning Cooperative Research Program and includes requests for several special studies and program reviews directed to TRB.

The legislation is complex, and its full impact on transportation research will take time to unfold. Administrative decisions by U.S. DOT, as well as the annual appropriations process, will affect the outcome. In the meantime, TRB will be working with sponsors, volunteers, and other constituencies to make the most of the opportunities presented by SAFETEA-LU to improve the performance of the nation's transportation system through research and innovation.



John R. Njord, Executive Director, Utah Department of Transportation, assumed responsibilities as 2005 TRB Executive Committee chair in May, when Chair Joseph H. Boardman was confirmed as Federal Railroad Administrator.

In the past year, during the final approach to reauthorization and its aftermath, TRB programs have been active, and volunteers and staff busy, as illustrated by the highlights below and by the more detailed discussions in other sections of this Annual Report.

## ANNUAL MEETING AND CONFERENCES

The TRB 84th Annual Meeting, January 9–13, 2005, attracted a record 9,500 transportation professionals and students from around the world. With a spotlight theme of Transportation from the Customer's Perspective, the program consisted of more than 500 sessions, 65 workshops, and 350 meetings of committees, panels, and task forces. More than 90 percent of the attendees who responded to a follow-up survey rated the meeting as good or excellent.

Among the many highlights was an address on highway safety by Brian O'Neill, President of the Insurance Institute for Highway Safety, at the Chairman's Luncheon (a follow-up feature article by O'Neill appeared in the July–August issue of *TRB News*); and the Thomas B. Deen Distinguished Lecture, delivered by Lillian Borrone, retired Assistant Executive Director of the Port Authority of New York and New Jersey (published in *Transportation Research Record: Journal of the Transportation Research Board*, No. 1906).

The TRB International Activities Committee took steps to increase international participation in TRB, as well as TRB involvement in international transportation research activities. Efforts



The 6th International Bridge Engineering Conference program included a CD-ROM with 70 peer-reviewed papers.

included working with prominent international organizations to disseminate the latest information on issues such as road pricing, public–private financing, and road safety in developing countries. The committee also established a subcommittee to provide a forum on transportation research and practice in Latin America.

During the course of the year, TRB sponsored 25 specialty conferences, cosponsored 16 others, and conducted more than 65 workshops. The central focus of the TRB Summer Conference in Boston, Massachusetts, in July was the Joint Summer Meeting of the Ports, Waterways, Freight, International Trade, Planning, Economics, Finance, Management, and Environmental Committees, with more than 40 committees participating. Other conferences included the Sixth International Bridge Engineering Conference, the 44th Annual Workshop on Transportation Law, the National Roundabouts Conference, the First National Conference on Roadway Pavement



Chairman's Luncheon speaker Brian O'Neill addresses the topic of highway safety policy.



Past Executive Committee Chair Lillian Borrone presents the Thomas B. Deen Distinguished Lecture, examining freight system responses to global trade demands.



Technical Activities Council Member Patricia McLaughlin (right) helps Edward Holzwarth and new attendee Lucile Guillaud of Massachusetts Institute of Technology navigate the information-packed Annual Meeting during the first-day networking session.

Preservation, and the Sixth National Conference on Transportation Asset Management.

The past year also saw the introduction of TRB e-sessions—recordings of key TRB Annual Meeting and conference sessions, complete with PowerPoint presentations, available via the TRB website.<sup>1</sup> This new service is part of our continuing efforts to make valuable information available to members of the TRB community who may not be able to attend our major meetings and conferences. E-sessions are posted within 24 hours of the event. More than 3,500 “hits” to the e-session website were recorded in the weeks following the TRB 2005 Annual Meeting.

### ENHANCED SERVICES TO SPONSORS

TRB took steps to enhance services by providing employees of TRB sponsoring organizations with

- Access to contact information for affiliates listed in the TRB online directory;
- Access via the web to all papers published in the *Transportation Research Record: Journal of the Transportation Research Board* since 1996; and
- Discounted registration fees for major TRB conferences in addition to the Annual Meeting.

### CRITICAL ISSUES

The TRB Executive Committee undertook the task of compiling an updated list of the critical issues in transportation, to direct attention to the issues, to facilitate debate on how to address the issues, and to encourage research to resolve them. The Executive Committee developed the list in an expedited time-frame, to make the document available by the TRB 2006 Annual Meeting in January.

### REVIEW OF PAPERS

The Technical Activities Council accepted and began implementing recommendations from a task force on the future of the TRB peer review process and the *Transportation Research Record: Journal of the Transportation Research Board*. Aided by surveys of the academic community and practitioners, the task force concluded that the Record continues to be an invaluable peer-reviewed journal and does not require fundamental change.

<sup>1</sup> <http://gulliver.trb.org/conferences/e-session/default.asp>.



The task force recommended steps to enable the Record and the TRB peer review process to address the perceptions and needs of the academic community. A first step was to provide authors submitting research papers to TRB with web access to the more than 6,000 papers published in the Record since 1996. In addition, TRB is establishing an advisory board to provide ongoing guidance on the journal’s content and quality.

### RESEARCH MANAGEMENT

In 2005, the National Cooperative Highway Research Program (NCHRP) and the Transit Cooperative Research Program (TCRP) operated at nearly the same funding levels as in 2004—\$35 million and \$8.2 million, respectively.

NCHRP published almost 60 reports this year, including 4 new volumes in the highway safety series and 6 in the security series. Other noteworthy reports advance the concept of transportation asset management, providing tools to develop scenarios and set performance measures, and address

International outreach remains a focus for TRB. At the Annual Meeting reception for international participants, Henry Kerali of the World Bank (left), learns about the work of (left to right) Neil Robertson, Queensland, Australia, Department of Main Roads; and Les Hawker and Andrew Wingrove, of the United Kingdom Highways Agency.



Technical Activities Council Chair Neil Pedersen (right) contributes to discussion of Critical Issues in Transportation at meeting of the Executive Committee Subcommittee on Planning and Policy Review, as (left to right) Cooperative Research Programs Director Robert Reilly, Technical Activities Director Mark Norman, and Executive Committee Vice Chair Michael D. Meyer listen.



Transportation security research funded through the Cooperative Research Programs also yields applications to disaster response and recovery. Volume 7 in the TCRP Report 86 series on public transportation security, for example, covers emergency mobilization and operations.

environmental analysis and planning methodologies for highway projects.

TCRP published 30 research reports on public transportation topics. These include a compendium of decisions and documents on transit charter bus service and related regulations, plus a joint effort with NCHRP on fostering effective, collaborative, multimodal decision making.

A new Airport Cooperative Research Program (ACRP), authorized by Congress at the end of 2003, is close to becoming a reality. Last year, TRB, the Federal Aviation Administration, and the Airports Council International worked out the details of the program, which were incorporated into a memorandum of agreement that now has been approved by the Secretary of Transportation. Congress appropriated \$3 million for ACRP in fiscal year 2005.

TRB Innovations Deserving Exploratory Analysis (IDEA) programs have provided seed funding for more than 200 projects to develop and test innovative concepts and products. A recent IDEA project involved full-scale testing of a hybrid composite bridge beam that could weigh one-seventh of a conventional concrete beam or one-third of a conventional steel beam. An earlier IDEA project helped develop a fiber-composite bridge beam that was displayed in a recent exhibit at the Smithsonian's Cooper-Hewitt National Design Museum in New York.



Carbon fiber I-beam, developed through NCHRP-IDEA Project 67 for lightweight sidewalks on roadway bridges, was displayed as an example of inventive engineered fabrics at the Cooper-Hewitt National Design Museum in New York.

## ADVICE TO POLICY MAKERS

This year, TRB published study reports on physical activity and the built environment and on the feasibility of a cooperative research program for hazardous materials transportation; conference reports on transportation finance, road pricing, and incorporating sustainability into the planning process; and a letter-style report reviewing an Oregon DOT research project on the extensive cracking in reinforced concrete bridges built in Oregon between 1948 and 1962.

The TRB Superpave Committee, which has advised the American Association of State Highway and Transportation Officials and the Federal Highway Administration on the implementation of the Superpave® system for the selection and design of asphaltic paving materials, issued its final report in October. The report includes a summary of the committee's findings and recommendations, along with its assessment of progress.

At the end of the year or in early 2006, we will publish a study examining the motor fuels tax, its viability, and potential alternatives. This report will provide timely input to a new commission on surface transportation policy and revenue, established under SAFETEA-LU.

Many past TRB studies have influenced provisions in the reauthorization legislation. These connections are detailed in the Studies and Information Services section of the Annual Report.

## SECURITY AND EMERGENCY RESPONSE

Hurricanes Katrina and Rita provided unwelcome reminders of the vulnerability of the nation's transportation system to natural disasters, our reliance on the system to move people out of harm's way, and its role in supporting recovery and reconstruction efforts. In most cases, transportation agencies performed heroically in restoring services in the aftermath of these storms. Plans for the 2006 Annual Meeting have been adjusted to provide opportunities for addressing transportation issues associated with Katrina and Rita.

Many of the security-related projects completed by TRB's Cooperative Research Programs in the past year are relevant to disaster response and recovery. Guidelines and planning aids address emergency operations, public transportation emergency mobilization, tunnel safety and securi-



Ralph J. Cicerone, who took office as 21st president of the National Academy of Sciences in July, is known for his work in atmospheric chemistry and climate change.



Former NAS President Bruce Alberts (*left*) and TRB Executive Director Robert E. Skinner, Jr., at a staff reception for Alberts on the 10th floor of the Keck Center at the National Academies. The building of the center, which also houses TRB, was a major initiative under Alberts' leadership.

ty, estimating the impacts of disruptions in transportation services, and incorporating security and emergency response into the planning process.

### NATIONAL ACADEMIES UPDATE

Early in 2005, Ralph J. Cicerone, then Chancellor of the University of California at Irvine, was elected President of the National Academy of Sciences. Cicerone, a distinguished atmospheric scientist, began his six-year term July 1. He succeeds two-term president Bruce Alberts, who has returned to the University of California at San Francisco as professor of biochemistry and biophysics.

### TRB LEADERSHIP

In January 2005, Joseph Boardman became chair of the TRB Executive Committee. Joe was then

Commissioner of the New York State Department of Transportation, but in the spring President Bush tapped him to become the Federal Railroad Administrator. Because this transition required Joe to step down from his duties as our chairman, John Njord, Executive Director of the Utah Department of Transportation, was appointed Executive Committee chair for the remainder of the 2005 term.

**John R. Njord**  
*Chair, Executive Committee*

**Robert E. Skinner, Jr.**  
*Executive Director*

# TRANSPORTATION RESEARCH BOARD 2005 EXECUTIVE COMMITTEE\*



Njord



Meyer



Skinner

**Chair: John R. Njord,** Executive Director, Utah Department of Transportation, Salt Lake City

**Vice Chair: Michael D. Meyer,** Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta

**Executive Director: Robert E. Skinner, Jr.,** Transportation Research Board

**Michael W. Behrens,** Executive Director, Texas Department of Transportation, Austin  
**Allen D. Biehler,** Secretary, Pennsylvania Department of Transportation, Harrisburg  
**Larry L. Brown, Sr.,** Executive Director, Mississippi Department of Transportation, Jackson

**Deborah H. Butler,** Vice President, Customer Service, Norfolk Southern Corporation and Subsidiaries, Atlanta, Georgia

**Anne P. Canby,** President, Surface Transportation Policy Project, Washington, D.C.

**John L. Craig,** Director, Nebraska Department of Roads, Lincoln

**Douglas G. Duncan,** President and CEO, FedEx Freight, Memphis, Tennessee

**Nicholas J. Garber,** Professor of Civil Engineering, University of Virginia, Charlottesville

**Angela Gittens,** Vice President, Airport Business Services, HNTB Corporation, Miami, Florida

**Genevieve Giuliano,** Director, Metrans Transportation Center, and Professor, School of Policy, Planning, and Development, University of Southern California, Los Angeles (Past Chair, 2003)

**Bernard S. Groseclose, Jr.,** President and CEO, South Carolina State Ports Authority, Charleston

**Susan Hanson,** Landry University Professor of Geography, Graduate School of Geography, Clark University, Worcester, Massachusetts

**James R. Hertwig,** President, CSX Intermodal, Jacksonville, Florida

**Gloria Jean Jeff,** Director, Michigan Department of Transportation, Lansing

**Adib K. Kanafani,** Cahill Professor of Civil Engineering, University of California, Berkeley

**Herbert S. Levinson,** Principal, Herbert S. Levinson Transportation Consultant, New Haven, Connecticut

**Sue McNeil,** Professor, Department of Civil and Environmental Engineering, University of Delaware, Newark

**Michael R. Morris,** Director of Transportation, North Central Texas Council of Governments, Arlington

**Carol A. Murray,** Commissioner, New Hampshire Department of Transportation, Concord

**Michael S. Townes,** President and CEO, Hampton Roads Transit, Virginia (Past Chair, 2004)

**C. Michael Walton,** Ernest H. Cockrell Centennial Chair in Engineering, University of Texas, Austin

**Linda S. Watson,** Executive Director, LYNX—Central Florida Regional Transportation Authority, Orlando

**Marion C. Blakey,** Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)

**Joseph H. Boardman,** Administrator, Federal Railroad Administration, U.S. Department of Transportation (ex officio)

**Rebecca M. Brewster,** President and COO, American Transportation Research Institute, Smyrna, Georgia (ex officio)

**George Bugliarello,** Chancellor, Polytechnic University, Brooklyn, New York; Foreign Secretary, National Academy of Engineering, Washington, D.C. (ex officio)

**J. Richard Capka,** Acting Administrator, Federal Highway Administration, U.S. Department of Transportation (ex officio)

**Thomas H. Collins** (Adm., U.S. Coast Guard), Commandant, U.S. Coast Guard, Washington, D.C. (ex officio)

**James J. Eberhardt,** Chief Scientist, Office of FreedomCAR and Vehicle Technologies, U.S. Department of Energy (ex officio)

**Jacqueline Glassman,** Deputy Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)

**Edward R. Hamberger,** President and CEO, Association of American Railroads, Washington, D.C. (ex officio)

**David B. Horner,** Acting Deputy Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)

**John C. Horsley,** Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)

**John E. Jamian,** Acting Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)

**Edward Johnson,** Director, Applied Science Directorate, National Aeronautics and Space Administration, John C. Stennis Space Center, Mississippi (ex officio)



Behrens



Biehler



Gittens



Giuliano



McNeil



Morris



Brewster



Bugliarello



Horsley



Jamian



Shane



Strock

\* Membership as of December 2005.





**Brown**



**Butler**



**Canby**



**Craig**



**Duncan**



**Garber**



**Groseclose**



**Hanson**



**Hertwig**



**Jeff**



**Kanafani**



**Levinson**



**Murray**



**Townes**



**Walton**



**Watson**



**Blakey**



**Boardman**



**Capka**



**Collins**



**Eberhardt**



**Glassman**



**Hamberger**



**Horner**



**Johnson**



**Kaveeshwar**



**McCown**



**Millar**



**Rudzinski**



**Sandberg**

**Ashok G. Kaveeshwar**, Administrator, Research and Innovative Technology Administration, U.S. Department of Transportation (ex officio)

**Brigham McCown**, Deputy Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation (ex officio)

**William W. Millar**, President, American Public Transportation Association, Washington, D.C. (ex officio) (Past Chair, 1992)

**Suzanne Rudzinski**, Director, Transportation and Regional Programs, U.S. Environmental Protection Agency (ex officio)

**Annette M. Sandberg**, Administrator, Federal Motor Carrier Safety Administration, U.S. Department of Transportation (ex officio)

**Jeffrey N. Shane**, Under Secretary for Policy, U.S. Department of Transportation (ex officio)

**Carl A. Strock** (Maj. Gen., U.S. Army), Chief of Engineers and Commanding General, U.S. Army Corps of Engineers, Washington, D.C. (ex officio)



## EXECUTIVE OFFICE



**C. Michael Walton**  
*Chair, Subcommittee  
for NRC Oversight*



**Robert E. Skinner, Jr.**  
*Executive Director*



**Suzanne B. Schneider**  
*Associate  
Executive Director*

The TRB Executive Office provides policy and operational guidance for programs and activities; oversees committee and panel appointments and report review; provides personnel support for TRB staff; develops and directs the Board's communications and outreach efforts; provides staff support to the Executive Committee and its Subcommittee for National Research Council (NRC) Oversight; and maintains liaison with the executive offices of the National Academies, the Board's parent institution. The Executive Office also manages the editing, production, design, and publication of many TRB reports, including its journal series, magazine, and other titles.

### OVERSIGHT ACTIVITIES

The Executive Office supports the work of the TRB Executive Committee, which provides policy direction to TRB programs and activities within the overall policies of the National Academies. Oversight of committee and panel appointments and of report review is the responsibility of the Executive Committee's Subcommittee for NRC Oversight, which ensures that TRB meets institutional standards and that its activities are appropriate for the National Academies. As part of its oversight function, the subcommittee monitors the Board's progress in expanding the representation of



Executive Director Robert E. Skinner, Jr., briefs the Technical Activities Council on National Academies and TRB initiatives and plans for 2005.

minorities and women on TRB committees and panels. C. Michael Walton, TRB Division Chair for NRC Oversight, heads this subcommittee and represents TRB as an ex officio member on the NRC Governing Board.

The Executive Office processes the Board's large volume of committee and panel appointments and maintains committee membership records. A hallmark of the National Academies is its institutional process to ensure the independent, rigorous review of reports. In maintaining these high standards, TRB carefully matches the review criteria and procedures to the type of report.



The Subcommittee for National Research Council Oversight ensures that TRB publications comply with National Academies review procedures to ensure quality and objectivity: (left to right) Joseph H. Boardman, Susan Hanson, Michael S. Townes, Suzanne B. Schneider, C. Michael Walton, John L. Craig, and Michael D. Meyer.

## PUBLICATIONS

To fulfill one of its oldest missions, TRB disseminates transportation research results and technology information through an extensive array of timely publications. The Board has gained national and international prominence for its books and reports assessing the state of the art or practice in specific areas of transportation, presenting the results of transportation research, addressing major national transportation policy issues, and identifying research needs. TRB continues to expand its publishing effort by releasing a growing number of titles electronically, some exclusively in electronic format.

TRB books and reports cover 17 broad categories and topics, spanning the range of transportation functions and modes. The TRB Publications Office produces titles in the following series:

- *Transportation Research Record: Journal of the Transportation Research Board* gathers technical papers, originally presented at TRB Annual Meetings and other conferences, that have been accepted for publication through peer review. Papers presented at the Annual Meeting and approved for publication are issued within 7 to 12 months. In 2005, the Board published 42 volumes of the journal, containing 832 papers grouped by subject. The series included a special 70-paper volume issued on CD-ROM for the Sixth International Bridge Engineering Conference. Record papers in the 2005 series were posted simultaneously with release of each printed volume to a searchable, password-protected section of the TRB website, which also includes all journal papers published since 1996.<sup>1</sup> A CD-ROM to be released early next

year will collect all Record papers published in 2005, adding a 5-year index of authors, titles, and subjects for all TRB publications.

- The bimonthly magazine *TR News* features timely articles on innovative and state-of-the-art research and practice in all modes of transportation. News items of interest to the transportation community, profiles of transportation professionals, book and journal summaries, meeting announcements, and highlights of TRB activities also are included. Special issues this year focused on school transportation, transportation security training and education, and controlling transportation noise. Selected features of *TR News* are posted on the TRB website, and the full issue is made accessible on the web on a four-month delay.<sup>2</sup>
- *Special Reports* contain the results of TRB policy studies on issues of national importance in transportation. These studies, many conducted at the request of federal agencies or of Congress, focus on a variety of complex, often controversial, topics. Two special reports were published in 2005, *Does the Built Environment Influence Physical Activity? Examining the Evidence* and *Cooperative Research for Hazardous Materials Transportation: Defining the Need, Converging on Solutions*. All current and selected out-of-print special reports are posted on the Board's website.<sup>3</sup>



<sup>1</sup> [www.TRB.org/publications/trr/Login.asp](http://www.TRB.org/publications/trr/Login.asp).

<sup>2</sup> [www.TRB.org/news/blurp\\_browse.asp?id=14](http://www.TRB.org/news/blurp_browse.asp?id=14).

<sup>3</sup> [www.TRB.org/news/blurp\\_browse.asp?id=12](http://www.TRB.org/news/blurp_browse.asp?id=12).



The Executive Office arranges for special speakers to address Executive Committee meetings to stimulate discussion and exploration of critical and emerging policy topics in transportation. At the June 2005 meeting in Woods Hole, Massachusetts, the topic was How Should America Pay for Transportation? with speakers (left to right) Darius Gaskins, Norbridge, Inc.; Rudolph Penner, Urban Institute; David Plavin, Airports Council International; and Steve Heminger, Metropolitan Transportation Commission, Oakland.

- *Conference Proceedings* assemble formal papers, presentations, and summaries of discussions from TRB conferences and workshops. Five titles were published this year, reporting on conferences about smart growth, transportation finance, road pricing, women's issues in transportation, and performance measures; all are posted on the web.<sup>4</sup> Another conference report was released in the related *Conference Proceedings on the Web* series.
- *Transportation Research Circulars* collect research problem statements, reports, and technical information from the work of TRB technical activities committees. Circulars published this year included peer exchanges on data programs, asset management, travel demand modeling, and performance measures for planning; technical papers on pavement preservation and geotechnical and structural design; and presentations on impaired driving countermeasures. Circulars are posted on the TRB website.<sup>5</sup>
- *Miscellaneous Reports* include special publications like the *Highway Capacity Manual 2000* and the *Access Management Manual*. The *Highway Capacity Manual 2000* was updated in 2005 to incorporate corrections and changes as of July 2005 into the two print versions—one for U.S. customary measures and one for metric—and the CD-ROM.

In addition, the Cooperative Research Programs Division produces an array of titles in several publications series. (For a list of all TRB publications, see pages 52–54.)

<sup>4</sup> www.TRB.org/news/blurb\_browse.asp?id=92.

<sup>5</sup> www.TRB.org/news/blurb\_browse.asp?id=16.



Communications efforts have brought TRB's reports and activities to new audiences; for example, a national association distributed 7,000 copies of the March–April *TR News* on school transportation to its members.

## COMMUNICATIONS

TRB is committed to improving the communication and public awareness of transportation issues and to enhancing the dissemination of research findings worldwide. Under the direction of the Board's Senior Communications Officer, TRB has been developing and implementing a variety of initiatives intended to improve communications and outreach.

One of the Board's most successful communications initiatives is the weekly *Transportation Research E-Newsletter*,<sup>6</sup> which reports on transportation research and research-related events within TRB and beyond. Circulation of the free newsletter is currently more than 18,000 and growing. About one-fifth of the readership is from countries outside the United States.

Other communications activities include enhancements to the Board's website; outreach to local government groups, other organizations, and individuals beyond traditional TRB constituencies; and targeting new audiences for specific reports and activities. In one of these efforts, TRB teamed with the National Association of School Boards to distribute more than 7,000 copies of the March–April 2005 issue of *TR News*, which had school transportation as its theme, to school superintendents, school board members, and staff responsible for pupil transportation.

### STAFF NEWS

- In the Publications Office, **Jennifer J. Weeks** was promoted to Editorial Services Specialist.
- **Erika H. Lloyd** joined the Publications Office staff as Assistant Editor, and **Leisa Evans-Bell** came on board as Senior Production Assistant.
- **Frances E. Holland**, formerly a Senior Program Assistant in the Studies and Information Services Division, joined the Executive Office as an Administrative Assistant.

<sup>6</sup> www.TRB.org/news/blurb\_detail.asp?id=3946. To subscribe, send an e-mail to RHouston@nas.edu with "Subscribe TRB E-Newsletter" in the subject field.



# TECHNICAL ACTIVITIES

The TRB Technical Activities Division provides a forum for transportation professionals to identify research needs and to share information on research and issues of interest. The Division's staff of specialists in each mode and discipline works with a community of volunteers to carry out activities on behalf of TRB sponsors and the transportation community. This community includes

thousands of members and friends involved in the work of more than 200 standing committees, as well as TRB representatives in each state, in more than 150 universities, and in 35 transit agencies.

The TRB Technical Activities Council oversees the organization and activities of the standing committees. Anne P. Canby, President of the Surface Transportation Policy Project, completed her



**Neil J. Pedersen**  
*Council Chair*  
Technical Activities



**Robert C. Johns**  
*Chair*  
Policy and  
Organization Group



**Marcy S. Schwartz**  
*Chair*  
Planning and  
Environment Group



**L. David Suits**  
*Chair*  
Design and  
Construction Group



**Leland D. Smithson**  
*Chair*  
Operations and  
Maintenance Group



**Brelend C. Gowan**  
*Chair*  
Legal Resources  
Group



**Barry M. Sweedler**  
*Chair*  
System Users Group



**Patricia V. McLaughlin**  
*Chair*  
Public  
Transportation Group



**Christopher P. L. Barkan**  
*Chair*  
Rail Group



**Christina S. Casgar**  
*Chair*  
Freight Systems  
Group



**Agam N. Sinha**  
*Chair*  
Aviation Group



**Larry L. Daggett**  
*Chair*  
Marine Group



**Mark R. Norman**  
*Director*  
Technical Activities



Anne P. Canby, Technical Activities Council Chair, 2002–2005, delivers a report at the TRB Executive Committee business meeting.

three-year term as Chair of the Technical Activities Council in April. She directed the committee reorganization that went into effect in 2004. Canby also spearheaded efforts to focus on diversity, synergy, and crosscutting issues among the standing committees. Neil Pedersen, Maryland State Highway Administrator, succeeds her as chair of the Technical Activities Council.

## STRENGTHENING THE RESEARCH COMMUNITY

An array of programs and activities—such as field visits, the Annual Meeting, and other conferences and meetings around the country—ensure regular, two-way communication that allows Technical Activities staff to fine-tune and improve TRB’s



Technical Activities staff make annual field visits and host and attend a variety of meetings and conferences around the country to ensure TRB’s responsiveness to researchers and users of research. Senior Program Officer Fred Hejl (*center*) meets with Ildefonso Burgos-Gil of Puerto Rico Highway and Transportation Authority during a program break at the biennial briefing for state representatives in May. Key contacts from 43 state departments of transportation attended the two-day meeting.

services to the transportation research community at large.

### Enhancing Services

TRB is providing employees of sponsoring organizations with

- Access to the complete contact information for individuals listed in the TRB online directory;
- Access to all of the papers published in the *Transportation Research Record: Journal of the Transportation Research Board* since 1996; and
- Discounted registration fees for major TRB conferences.

Technical Activities staff also visited every state department of transportation (DOT), as well as selected universities, transit and other modal agencies, and industry organizations, to determine the issues and to discuss how TRB can help. A summary of the field visits will appear in the January–February 2006 issue of *TR News*.

### Bringing People Together

The TRB 84th Annual Meeting, January 9–13, attracted a record 9,500 transportation professionals and students from around the world. The program comprised more than 500 sessions, 65 workshops, and 350 meetings of TRB committees, panels, and task forces. More than 90 percent of the attendees who responded to a follow-up survey rated the meeting as good or excellent.

A successful TRB Summer Conference convened in July in Boston, Massachusetts. The central part of the conference was the Joint Summer Meeting of the Ports, Waterways, Freight, International Trade, Planning, Economics, Finance, Management, and Environmental Committees. More than 40 TRB committees conducted business and attended sessions on diverse topics. Other events in conjunction with the conference included the Road Pricing Workshop, the Rail Passenger Caucus, and the Commodity Flow Survey Conference. TRB sponsored 25 specialty conferences, workshops, and symposia in 2005—summaries of several follow. TRB also cosponsored 16 conferences with other organizations.

Efforts to increase participation by young people, minorities, and women in committees and activities continued with success. In addition, the International Activities Committee is working to increase international participation in TRB and to increase TRB participation in international trans-



Performance Measurement Committee Chair Lance Neumann (left, with microphone) and past Technical Activities Council Chair Kathleen Stein (right) lead a briefing discussion for Technical Activities Committee chairs.



The Annual Meeting has served as a successful way to recruit young people, women, and minorities into TRB committees and activities. Karla Karash (standing), chair of the Public Transportation Marketing and Fare Policy Committee, answers questions from first-time participants at the Public Transportation Group networking table.

portation research activities. The committee has established a subcommittee on Latin American activities.

Technical Activities committees peer-reviewed more than 2,800 papers and developed the program for the TRB 85th Annual Meeting, January 22–26, 2006. The spotlight theme for the 2006 Annual Meeting is Transportation 2025: Getting There from Here. Also highlighted will be the 50th Anniversary of the Interstate Highway System; the latest information on the transportation research programs included in the new surface transportation reauthorization legislation, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU); and the transportation impacts of Hurricane Katrina and other natural disasters.

### Providing Information

TRB standing committees sponsored 832 papers for publication in 42 volumes of the 2005 series of the *Transportation Research Record: Journal of the Transportation Research Board*. Several conference proceedings and web circulars also were released; many are summarized in the following sections.

The Technical Activities Council is implementing recommendations from a task force on the TRB peer review process and the *Transportation Research Record: Journal of the Transportation Research Board*. Aided by surveys of the academic community and of practitioners, the task force concluded that the Record continues to be an invaluable peer-reviewed journal and does not require fundamental changes. The journal's combination of papers



The 2005 Annual Meeting program included quickly assembled special sessions detailing the transportation and logistical challenges of the December 2004 tsunamis in South and Southeast Asia. Tony Dalrymple, Johns Hopkins University, was one of a panel of speakers on airlift and sealift of aid and relief, rebuilding infrastructure, and effects on the global supply chain.

from the academic community and practitioners is regarded as a strength, not a weakness. Additional steps need to be taken, however, to ensure that the Record and the TRB peer review process are responsive to the perceptions and needs of the academic community—but without compromising the interests of practitioners and without adding to the paper review burden of the standing committees.

In response to a task force recommendation, authors who submit research papers to TRB are eligible for web access to papers previously published in the Record.<sup>1</sup> This makes the more than 6,000 peer-reviewed papers published in the jour-

<sup>1</sup> Transportation Research Record, [www.TRB.org/publications/trr/Login.asp](http://www.TRB.org/publications/trr/Login.asp).



Program Officer Rich Cunard reviews the paper selection process for publication in TRB's journal with the Highway Capacity and Quality of Service Committee.

nal since 1996 readily available to researchers. In addition, an appointed advisory board will provide guidance on maintaining the quality of TRB's journal and the peer review of papers.

Introduced on the TRB website in the past year were e-sessions—recordings of key Annual Meeting and conference programs, along with PowerPoint presentations. The service allows those who are not able to attend major meetings and conferences to gain valuable information from the presentations quickly, through web postings usually within 24 hours. The e-session website received more than 3,500 visits in the weeks after the TRB 2005 Annual Meeting.<sup>2</sup>

## POLICY AND ORGANIZATION

### Transportation Policy

#### *Critical Issues in Transportation*

More than 60 standing committees generated 100-plus pages of comments on TRB's update of *Critical Issues in Transportation*. The Technical Activities Council prioritized the committee recommendations, which were submitted to the TRB Executive Committee and its Subcommittee on Planning and Policy Review, for consideration in revising the key document.

<sup>2</sup> TRB e-sessions, <http://gulliver.trb.org/conferences/e-session/default.asp>.



Technical Activities Council members L. David Suits, Marcy S. Schwartz, and Leland D. Smithson, review standing committees' comments on TRB's critical issues draft in Woods Hole, Massachusetts, in June.

### Transportation Finance

Conference Proceedings 33, *Transportation Finance: Meeting the Funding Challenge Today, Shaping Policies for Tomorrow*, was published in June.<sup>3</sup> The report summarizes presentations at the Third National Conference on Transportation Finance and includes committee findings and recommendations developed from the presentations and discussions. The sessions examined the new mechanisms for financing transportation infrastructure and operations, the benefits and costs of implementing the techniques, and the development of additional funding mechanisms and sources.

### Asset Management

The 6th National Conference on Transportation Asset Management: Making Asset Management Work in Your Organization was held November 1–3, in Kansas City, Missouri. The conference served as a forum for practitioners, researchers, and others to share information on a variety of transportation issues related to asset management.

### Congestion Pricing

Conference Proceedings 34, *International Perspectives on Road Pricing*, was published in July.<sup>4</sup> The report covers the International Symposium on Road Pricing, November 19–22, 2003, in Key Biscayne, Florida, a collaborative effort of TRB, Florida DOT, the Organization for Economic Cooperation and Development, and the Federal Highway Administration. The presentations explored pricing successes and the challenges that have accompanied implementation, as well as the future evolution of road pricing.

The Technical Activities Council has established a new standing committee on congestion pricing. The committee fosters research on the technological, operational, business, administrative, political, and institutional aspects of innovative congestion pricing for systems and services in all modes of transportation.

## Data and Information Systems

### Census Data

A workshop on Census Data for Transportation Planning: Preparing for the Future examined the use of the decennial census data for transportation and explored the implications of the Census

<sup>3</sup> Conference Proceedings 33, [www.TRB.org/publications/conf/cp33transportationfinance.pdf](http://www.TRB.org/publications/conf/cp33transportationfinance.pdf).

<sup>4</sup> Conference Proceedings 34, [www.TRB.org/publications/conf/CP34roadpricing.pdf](http://www.TRB.org/publications/conf/CP34roadpricing.pdf).



Bureau's transition from the so-called long form to the annual American Community Survey. The workshop took place May 11–13, 2005, in Irvine, California.

#### *Commodity Flow Survey*

The Commodity Flow Survey Conference, July 8–9 in Boston, Massachusetts, examined the use of a critical survey for freight planning and discussed improvements for the 2007 survey.

#### *Vehicle Inventory and Use Survey*

The Vehicle Inventory and Use Survey Workshop, September 28 in Washington, D.C., provided an opportunity for experienced users of the data to discuss ways to improve the 2007 version of the Census Bureau survey.

#### *SAFETEA-LU Data Requirements*

A conference conducted December 8–9 in Washington, D.C., identified and refined the data issues associated with surface transportation programs under SAFETEA-LU. Participants discussed efficient data strategies for transportation organizations.

#### *Research and Education*

The Conduct of Research Committee and the Technology Transfer Committee sponsored a workshop that attracted more than 60 transportation professionals from federal, state, city, and county agencies, the private sector, and research and educational communities to address the dissemination and implementation of research results. The committees subsequently held a joint midyear meeting to continue discussion of the issues and to establish an agenda. The committees produced a web circular, *Optimizing the Dissemination and Implementation of Research Results*.<sup>5</sup>

## PLANNING AND ENVIRONMENT

### *Environment*

#### *Environmental Stewardship*

The Native American Transportation Issues Committee, the Environmental Analysis in Transportation Committee, and the Historic and Archaeological Preservation in Transportation Committee held a joint summer meeting in Santa Fe, New Mexico, September 11–14. With the theme, Envi-

ronmental Stewardship and Streamlining: Fact or Fiction, the sessions served as a forum to review and critique streamlining and stewardship initiatives from around the country.

The Waste Management in Transportation Committee conducted a conference on Environmental Stewardship in Transportation, in Charlotte, North Carolina, July 17–19. The program explored the transition in the transportation industry's approaches to solid and hazardous waste, from remediation and management to minimization through proactive environmental management systems.

#### *Community Impact Assessment*

Two workshops were held on community impact assessment—one in Scottsdale, Arizona, June 6–9, and the second in Trenton, New Jersey, September 11–14. Both workshops provided practitioners from across the country the opportunity to discuss innovative community impact assessment methods, practices, and tools to improve planning and engineering services.

#### *Ecology and Transportation*

The Ecology and Transportation Task Force cosponsored the International Conference on Ecology and Transportation in San Diego, California, August 29–September 2. The conference identified and shared research applications and best management practices to address issues involving wildlife, habitats, and ecosystems in the delivery of surface transportation systems.

### *Transportation System Planning*

The 10th Transportation Planning Applications Conference, organized by the Transportation Planning Applications Committee as a forum for the exchange of ideas, methods, and experiences, took place in Portland, Oregon, April 24–28. Presentations offered practical, innovative solutions and addressed planning policies and procedures, as well as methods of technical analysis.

### *Social, Economic, and Cultural Issues*

#### *Sustainability*

Scheduled for release by early next year, the report of the Conference on Integrating Sustainability into the Transportation Planning Process evaluates the state of practice, considers the feasibility of strategies for introducing sustainability concerns into planning for surface transportation facilities and operations, and identifies research and education

<sup>5</sup> Circular E-C070, <http://trb.org/publications/circulars/ec070.pdf>.

needs.<sup>6</sup> The conference took place in July 2004 in Baltimore, Maryland, with the sponsorship of the Federal Highway Administration (FHWA) and the U.S. Environmental Protection Agency.

The Technical Activities Council established a standing committee on sustainability. The charge is to advance understanding of the relationship between transportation and sustainability and to explore ways that transportation can contribute to achieving sustainability for economic growth, social equity, and a healthy environment.

#### *Environmental Justice*

The Technical Activities Council also approved a new committee on environmental justice. The committee will assist officials and practitioners in understanding and evaluating the disparate impacts of transportation services, including adverse effects on human health and environmental effects on minority and low-income populations; encourage a multidisciplinary approach to research on environmental justice; and disseminate research results.

## DESIGN AND CONSTRUCTION

The standing committees in the Design and Construction Group have been identifying practice-ready papers from the TRB Annual Meeting for the past 8 years. The paper titles are posted on the TRB website before the meeting<sup>7</sup>; this year, the papers also were identified on the Annual Meeting Compendium of Papers CD-ROM.

### *Design*

#### *Geometric Design*

The Operational Effects of Geometrics Committee and the Geometric Design Committee conducted the third in a series of symposia, attracting practitioners, policy makers, and researchers from around the world to discuss common issues and to share challenges and successes. The TRB e-session website has posted 17 of the presentations from the meeting, held June 29–July 2 in Chicago, Illinois.<sup>8</sup>

#### *Roadside Safety Issues*

The Roadside Safety Design Committee met in St. George, Utah, and conducted a workshop to

review the update of National Cooperative Highway Research Program (NCHRP) Report 350, *Recommended Procedures for the Safety Performance Evaluation of Highway Features*, as well as other roadside safety issues.

#### *Stormwater Management*

The Hydrology, Hydraulics, and Water Quality Committee sponsored a symposium on Stormwater Management for Highways, in Bonita Springs, Florida, July 10–12. The sessions examined the regulatory environment; water quality characterizations and monitoring; operation and maintenance issues; design and selection of controls, including nonstructural controls; impacts on receiving waters and on stream stability; restoration and rehabilitation; research needs; and more.

#### *Structures*

The Structures Section and FHWA sponsored the 6th International Bridge Engineering Conference in Boston, Massachusetts, July 17–20; the American Association of State Highway and Transportation Officials (AASHTO), Massachusetts Highway Department, and Texas DOT were cosponsors. The full program, including three plenary sessions, informed delegates about the latest advances in bridge engineering. A poster session featured noteworthy projects, a security update, and presentations of innovative processes for accelerated bridge construction practices. Papers were published in a special CD-ROM edition of TRB's journal.<sup>9</sup>

### *Construction and Materials*

#### *Accelerating Innovation*

The Accelerating Innovation in the Highway Industry Task Force continued to examine ways to overcome barriers to technology transfer in organizational culture, addressing impediments caused by a lack of executive-level knowledge about emerging technologies.

In a follow-up to a 2004 workshop on cost estimating, the task force sponsored a workshop on performance-based maintenance contracting, April 27. Participants included state DOT executives, as well as officials from major private maintenance contractors.

#### *Quality Assurance Terms*

The Management of Quality Assurance Commit-

<sup>6</sup> Conference Proceedings 37, [www.TRB.org/publications/conf/CP37sustainability.pdf](http://www.TRB.org/publications/conf/CP37sustainability.pdf).

<sup>7</sup> [http://trb.org/am/ip/practical\\_papers.asp?e=67](http://trb.org/am/ip/practical_papers.asp?e=67).

<sup>8</sup> <http://gulliver.trb.org/conferences/e-session/2005geo.htm>.

<sup>9</sup> *Transportation Research Record: Journal of the Transportation Research Board*, CD 11-S.

tee completed the third update to the *Glossary of Highway Quality Assurance Terms*. Designed as a reference, the document defines terms commonly used in highway quality assurance. The latest edition is available online in the web circular series.<sup>10</sup>

### **Soils, Geology, and Foundations**

#### *Aggregates for Highway Construction*

In May 2005, the Engineering Geology Committee, the Exploration and Classification of Earth Materials Committee, and the Mineral Aggregates Committee sponsored a symposium on Aggregates for Highway Construction: Characterization and Performance, immediately preceding the 56th Highway Geology Symposium in Wilmington, North Carolina. The symposium provided an overview of aggregate use in highway construction, with attention to issues of general characteristics, evaluation techniques, and properties important to performance in specific applications.

#### *Load and Resistance Factors*

The Foundation of Bridges and Other Structures Committee and the General Structures Committee jointly sponsored publication of a web circular, *Calibration to Determine Load and Resistance Factors for Geotechnical and Structural Design*.<sup>11</sup> The primary audience consists of researchers and design engineers who are conducting calibrations with local data; who are validating design methods not covered by AASHTO specifications; or who are developing specifications at a national level.

## **OPERATIONS**

### **High-Occupancy Vehicle Lanes**

The 12th in a series of conferences organized by the High-Occupancy Vehicle (HOV) Systems Committee focused on HOV systems, managed lanes, and pricing strategies for improving metropolitan mobility and accessibility, April 17–20 in Houston, Texas. The TRB e-session website includes 17 of the presentations.

### **Vehicle–Infrastructure Integration**

The Vehicle–Highway Automation Committee and the Intelligent Transportation Systems Committee explored and developed research needs for

<sup>10</sup> Circular E-C074, [www.TRB.org/publications/circulars/ec074.pdf](http://www.TRB.org/publications/circulars/ec074.pdf).

<sup>11</sup> Circular E-C079, [www.TRB.org/publications/circulars/ec079.pdf](http://www.TRB.org/publications/circulars/ec079.pdf).



cooperative vehicle–highway systems in the third in a series of workshops, September 23–24, in Dulles, Virginia. The program examined the role of the driver, addressing such issues as the responsibilities, skills, and knowledge required for driving a partially automated vehicle that senses the environment via wireless communication and that performs cooperatively to reduce crash risk.

### **Signal Systems and Highway Capacity**

The Traffic Signal Systems Committee and the Highway Capacity and Quality of Service Committee held a joint midyear meeting and workshop in Las Vegas, Nevada, July 10–15, to discuss research initiatives. The committees sought a mutual understanding of modern traffic signal operation and modeling and of the research needed to develop analysis procedures closely attuned to the state of the practice.

## **MAINTENANCE**

The maintenance committees joined with the operations committees to cosponsor the 17th Biennial Symposium on Visibility and Traffic Control Devices and to form a Surface Transportation Weather Task Force (see box, page 18).

Recognizing the importance of infrastructure preservation to highway agencies, the Roadway Pavement Preservation Task Force convened the 1st National Conference on Roadway Pavement Preservation, October 31–November 1, in Kansas City, Missouri. The conference provided a forum for current and potential users to gain a more comprehensive understanding of roadway pave-

The design of the skyway structures for California's San Francisco–Oakland Bay Bridge was a subject of one of the 70-plus papers presented at the International Bridge Engineering Conference.

ment preservation, to discuss successful pavement preservation activities, and to generate suggestions for improving projects. Held in conjunction with the 6th National Conference on Transportation Asset Management, the program included two joint sessions. Conference papers were published as a web circular.<sup>12</sup>

## SAFETY

### *Planning for Safety*

Through the Transportation Safety Management Committee's Subcommittee on Safety-Conscious Planning (SCP), TRB continues participating in research and implementation of the legislative mandate—reiterated in SAFETEA-LU—to include safety as a consideration in transportation planning. The goal of convening 25 state-held SCP forums by 2005—"25 by '05"—was achieved.

The concept of strategic highway safety planning (SHSP), also endorsed in SAFETEA-LU, is

<sup>12</sup> Circular E-C078, [www.TRB.org/publications/circulars/ec078.pdf](http://www.TRB.org/publications/circulars/ec078.pdf).

gaining interest, with approximately 35 states developing comprehensive, multidisciplinary, statewide safety plans encompassing all roads. Information and data from the SHSP process will be made available for SCP, which focuses on long-range safety priorities and decision making for state transportation improvement programs.

### *Highway Safety Manual*

The midyear meeting of the Highway Safety Manual Task Force focused on three ongoing NCHRP projects to develop models and to draft chapters. The AASHTO Standing Committee on Research (SCOR) accepted the task force's recommendations for research to develop a separate quantitative model for predicting pedestrian safety. SCOR has funded the preparation of additional chapters and the completion of the first draft of the manual, beginning in 2006.

### *Drugs in Traffic Safety*

The Alcohol, Other Drugs, and Transportation Committee continued a tradition of technical midyear meeting workshops. The theme this year

## EXPLORING THE EFFECTS OF WEATHER ON SURFACE TRANSPORTATION

The Operations and Maintenance Group has created a Surface Transportation Weather Task Force to serve as a forum for the exchange of information on the effects of weather on surface transportation. Weather phenomena—severe or benign—produce significant effects on surface transportation safety and mobility nationwide and year-round. In a 2004 study, the National Research Council attributed 7,000 fatalities and 800,000 injuries to weather-related crashes annually. Snow, ice, and fog cause more than 500 million hours of travel delays each year, and rain—the most frequent weather event—also contributes to delays and congestion.

The users, operators, and builders of surface transportation facilities continually modify decisions according to the weather and its physical effects on the system. For example, a forecast of inclement weather can lead users to change modes—public transportation instead of private vehicles; to adjust departure time; or to defer trips—staying at home and telecommuting.

Severe weather conditions in any season can affect vehicle speeds, roadway capacities, and the likelihood of crashes. Severe snow, wind, or fog can cause delays or road closures, affecting the ability of commercial carriers

to meet just-in-time delivery schedules. Emergency managers depend on accurate road weather information during evacuation and reentry operations. Weather affects nearly every user of surface transportation—first responders arriving at the scene, local school administrators with fleets of buses, individual commuters, and millions of holiday travelers.

The new TRB task force will work with the transportation and the meteorological communities, promoting research and technology transfer to improve the management of surface transportation by minimizing the impacts of weather and maximizing the safety and mobility of users.





The National Academies Keck Center was the site for the 17th Biennial Symposium on Visibility and Traffic Control Devices.

was Drugs in Traffic Safety. Papers were supplemented with formal discussions and audience participation. Texts from the previous workshop were published in January as a web circular, *Implementing Impaired Driving Countermeasures: Putting Research into Action—A Symposium*.<sup>13</sup>

### **Railroad Operational Safety**

A new task force was created on Railroad Operational Safety, with a special emphasis on human factors. The first activity of the task force was a mid-year meeting and workshop on Investing in Human Capital: Selection, Training, and Work Socialization in the Railroad Industry, September 15–16.

## **LEGAL RESOURCES**

The Legal Resources Group conducted its 44th Annual Workshop in Portland, Oregon, July 17–20, with approximately 160 lawyers participating. The group committees assembled educational programs covering a variety of substantive topics. The workshop continues to serve as a major source of continuing legal education for highway and transit attorneys.

### **Transit Passenger Civil Rights**

The Transit Law Committee continued to focus on security topics and was instrumental in publishing Transit Cooperative Research Program (TCRP) Legal Research Digest 20, *Transit Passengers and Civil Rights*.<sup>14</sup> The digest examines transit agency security measures in the context of the constitutional rights of passengers.

<sup>13</sup> Circular E-C072, [www.TRB.org/publications/circulars/ec072.pdf](http://www.TRB.org/publications/circulars/ec072.pdf).

<sup>14</sup> TCRP LRD 20, [www.TRB.org/publications/tcrp/tcrp\\_lrd\\_20.pdf](http://www.TRB.org/publications/tcrp/tcrp_lrd_20.pdf).

### **Studies in Transportation Law**

Members of the Legal Resources Group executive board continued to work closely with legal cooperative research projects: NCHRP Project 20-6, Legal Problems Arising out of Highway Projects; and TCRP Project J-5, Legal Aspects of Transit and Intermodal Transportation Law. The two projects are copublishing an eight-volume revision of Selected Studies in Transportation Law. Volume 7, *Transit Charter Bus Service: Decisions and Documents*, was published this year.

## **AVIATION**

### **Design and Management Tools**

In 2004, TRB initiated a project to assist the Federal Aviation Administration (FAA) with plans to develop tools for assessing the emissions impacts of aviation operations. After the first workshop, at which participants defined the characteristics of the tools, the scope of the study was expanded to include consideration of economic issues.

By January 2005, the study committee had submitted findings, recommendations, and options for developing an integrated set of tools.<sup>15</sup> FAA is now contracting to implement the recommendations and will return to the committee for an evaluation of progress after one year.

### **Aviation Forecasting**

The Aviation Economics and Forecasting Committee and the Light Commercial and General Aviation Committee conducted two workshops with FAA cooperation. The purpose was to provide comments and discussion about current forecasts.

The September 29–30 workshop focused on understanding the likely effects of the economic crises facing the airline industry. The second workshop, October 18–19, emphasized the impact on the aviation system as microjets enter the business, charter, and general aviation fleets.

### **National Airspace System**

The Airspace and Airfield Capacity and Delay Committee, in conjunction with the National Center of Excellence for Operations Research at the University of California–Berkeley, conducted an invitational symposium on optimizing the National Airspace System, September 9.

<sup>15</sup> Letter Report, [www.TRB.org/publications/reports/aedt\\_april\\_2005.pdf](http://www.TRB.org/publications/reports/aedt_april_2005.pdf).



Scanning device mounted on U.S. Customs Border Protection truck (left) surveys incoming containers; freight security is one of many ongoing topics for the Freight Transportation Industry Roundtable.

## FREIGHT SYSTEMS

### *Industry Roundtable*

Coordination of modes, public agencies, and private-sector carriers, shippers, and operators is essential for the efficient movement of goods. With support from U.S. DOT, TRB established a Freight Transportation Industry Roundtable for discussions on the context and issues in the development of U.S. freight transportation initiatives.

The roundtable held its initial meeting in June and hosted two of three planned invitational workshops for public-sector officials to discuss priority needs in national freight transportation with representatives of the industry and experts in related fields. The workshops addressed such freight issues as productivity and capital investment, security, financial capacity, performance metrics, and common infrastructure. Shippers, carriers, and federal policy makers presented perspectives.



Participants in the 30th Annual TRB Summer Port, Waterways, and International Trade Conference toured Massport's Conley Terminal in July. More than 40 TRB committees convened in Boston for a variety of coordinated conferences, business meetings, and programs.

## *Global Trade Demands*

A highlight of the 2005 Annual Meeting was the Thomas B. Deen Distinguished Lecture by Lillian Borrone, "Sparking the Connection: Supplying Freight Systems Responses to Global Trade Demands." A past chair of the TRB Executive Committee, Borrone is retired Assistant Executive Director of the Port Authority of New York and New Jersey. The Freight Systems Group was a primary sponsor of the 2005 Deen Lecture.

The Annual Meeting program also included a day-long series of sessions on the global supply chain. The topic continued with a program on global supply chain security at the TRB Summer Conference in Boston. The summer conference also examined intermodal connections and related planning, management, administration, economics, and financing considerations.

The Marine Group cosponsored the SmartRiver21: International Symposium on Global Commerce and Strategies for Inland Navigation and Economic Development, in Pittsburgh, Pennsylvania, October 2–4.

## MARINE

### *30th Annual Ports and Waterways Conference*

The 30th Annual TRB Summer Ports, Waterways, Freight, and International Trade Conference convened in Boston, July 10–12. Plenary sessions covered a range of topics, from the challenges and opportunities facing the marine transportation system to supply chain security. Participants also visited Massport's Conley Terminal and made a boat tour of Boston Harbor, with briefings on ferry operations and liquefied natural gas transport.

### *Marine Board*

The Marine Board held its spring meeting in Memphis, Tennessee, in April, with focus sessions on port and waterway security and on the safety of liquefied natural gas terminals and vessels. The fall meeting in Washington, D.C., commemorated the 40th anniversary of the Marine Board, with several past chairs, members, and sponsors as guests.

## PUBLIC TRANSPORTATION

### *Bus Rapid Transit*

The Bus Transit Systems Committee and the High-Occupancy Vehicle Systems Committee convened the Bus Rapid Transit (BRT) Research



Marine Board members visited U.S. Army Corps of Engineers vessels on the Mississippi River in Memphis, Tennessee, as part of the program for the spring meeting.

Agenda Workshop in Washington, D.C., June 21. Workshop cosponsors included the Federal Transit Administration (FTA), the American Public Transportation Association (APTA), the National Transit Institute, and the Center for Urban Transportation Research. Planning for the Third National BRT Conference, scheduled for the summer of 2006, is under way, with APTA and FTA as cosponsors.

#### ***Rail Passenger Caucus***

The Seventh Rail Passenger Caucus met in Boston, July 7–9, in conjunction with the TRB Summer Conference. Five rail transit–related committees contributed to the program: Intermodal Transfer Facilities, Rail Transit Systems, Commuter Rail Transportation, Light Rail Transit, and Intercity Passenger Systems. The Massachusetts Bay Transportation Authority, Amtrak, Massachusetts Bay Commuter Rail, Northern New England Passenger Rail Authority, and Rhode Island Public Transportation Authority cosponsored the event. Senior members of the cooperating agencies conducted briefings, site inspections, and facility tours.

#### ***Light Rail Transit***

Planning continued for the 10th Light Rail Transit Conference, in St. Louis, April 9–11, 2006. Joining TRB and APTA as conference sponsors is the International Association of Public Transport, which will add an international research component to the event. The peer-reviewed papers will be published as a web circular.

#### ***Rural and Intercity Bus***

Planning also started for the 17th National Rural Public and Intercity Bus Transportation Confer-

ence, October 22–25, 2006, in Stevenson, Washington. Conference cosponsors are FTA, the American Public Works Association, and Washington State DOT.

## **RAIL**

### ***Wheel–Rail Interaction***

Managing the maintenance of railroad tracks and facilities is critical for freight railroads in keeping up with the continued growth in rail traffic and the resulting strains on capacity. A day-long Annual Meeting workshop, Managing Wheel–Rail Interaction to Reduce the Stress State of the Railroad, provided a forum for track and vehicle managers to focus on management of the wheel–rail interface. Rail industry experts from North America and Europe examined methods of measuring wheel–rail performance and discussed corrective actions.

### ***Strategic Directions***

Four rail committees—Intercity Rail Passenger Systems, Railroad Operating Technologies, Guided Intercity Passenger Transportation, and Railway Maintenance—held midyear meetings in Boston in early July. After separate business meetings, the committees gathered for a joint half-day session featuring technical presentations and discussions about strategic directions for the Rail Group.

The Local and Regional Rail Freight Transport Committee held a midyear meeting at the Summer Conference in July, as well as an outreach meeting with the AASHTO Rail Committee in late August. The Rail Group expanded this year with the addition of the new Railroad Operational Safety Task Force.

## STAFF NEWS

- **Martine A. Micozzi** joined the Technical Activities Division staff as Senior Program Officer for Administration, Policy, and International Activities, transferring from the TRB Cooperative Research Programs Division.
- **Joseph A. Breen**, Senior Program Officer for Aviation, retired after 14 years of service with the National Research Council (NRC) and TRB. He was Study Director for the NRC Commission on Engineering and Technical Systems for 3 years before transferring to TRB in 1994.
- **Christine Gerencher**, formerly Senior Engineer, American Airlines, is the new Senior Program Officer for Aviation.
- **Joedy Cambridge**, Senior Program Officer for Marine Transportation, the Marine Board, and Intermodal Transportation, received a Community Service Award from the National Academies in October.
- Also joining the Technical Activities Division was **Greg Wheeler**, Meetings Assistant.

## 2005 AWARDS

Lillian Borrone (*left*), retired Assistant Executive Director of the Port Authority of New York and New Jersey, delivered the Thomas B. Deen Distinguished Lecture, calling for a national transportation policy that integrates the modal freight systems to meet global trade demands. At right are Thomas B. Deen, past Executive Director of TRB, and Anne P. Canby, Chair of the Technical Activities Council, which sponsored the lecture.



(*Above*) TRB's W. N. Carey, Jr., Distinguished Service Award recognized public servant, academician, and consulting engineer A. Ray Chamberlain (*right*), vice president of Parsons Brinckerhoff, former president of Colorado State University, and past director of Colorado DOT. TRB Executive Committee Chair Michael S. Townes (*left*) presented the award.

(*Above right*) Sandra Rosenbloom (*right*), professor of planning at the University of Arizona, Tucson, received the TRB Roy W. Crum Distinguished Service Award for her pioneering research on transportation and society.



(*Above*) TRB Executive Director Robert E. Skinner, Jr., presented the Frank Turner Medal for Lifetime Achievement in Transportation to Lawrence D. Dahms, retired executive director of the San Francisco Bay Area's Metropolitan Transportation Commission (MTC), for his distinguished career in transportation management. The award citation noted his results-oriented leadership, both at MTC and on national transportation policy issues. TRB serves as the secretariat for the award, which is sponsored by 16 organizations in commemoration of Turner's extraordinary accomplishments in the development and construction of the U.S. transportation system.

Richard R. Stander, Sr. (*left*), president of Mohican Construction Company, Mansfield, Ohio, was honored for his career contributions to highway progress with the George S. Bartlett Award, jointly presented by AASHTO, the American Road and Transportation Builders Association, and TRB.





# STUDIES AND INFORMATION SERVICES

The Studies and Information Services Division conducts policy studies at the request of the U.S. Congress, the executive branch agencies, states, and other sponsors; operates a bibliographic database of completed research and provides library reference services; and produces syntheses of current practices in highway and transit operations.

## POLICY STUDIES

With guidance from committees drawn from the nation's leading experts, the Policy Studies group produces reports examining complex and controversial transportation issues. Studies cover all modes of transportation and a variety of safety,



Genevieve Giuliano, Chair of the Subcommittee on Planning and Policy Review, delivers a report to the TRB Executive Committee in January.

economic, environmental, and research policy issues. The U.S. Congress has adopted many recommendations from TRB policy reports, attesting to the substantive value of the findings (see text box, page 24).

The Subcommittee on Planning and Policy Review provides oversight for TRB's policy work, under the leadership of former TRB Executive Committee Chair Genevieve Giuliano, Professor in the School of Policy, Planning, and Development, and Director of the Metrans Transportation Center, University of Southern California. Since 1998, all completed policy study reports are posted on the TRB website.<sup>1</sup> *Informing Transportation Policy Choices*, a publication that provides an overview of all TRB policy studies from 1983 through 2002, also is posted on the Policy Studies page of the website.<sup>2</sup>

## Completed Reports

*Does the Built Environment Influence Physical Activity? Examining the Evidence*  
(Special Report 282)

The study committee was charged to review the broad trends affecting the relationships among physical activity, health, transportation, and land



**Genevieve Giuliano**  
Chair  
Subcommittee on  
Planning and Policy  
Review



**Stephen R. Godwin**  
Director  
Studies and  
Information Services

<sup>1</sup> [http://www4.trb.org/trb/onlinepubs.nsf/web/divb\\_publications](http://www4.trb.org/trb/onlinepubs.nsf/web/divb_publications).

<sup>2</sup> <http://gulliver.trb.org/publications/policy/itpc.pdf>.

## IMPACT OF TRB POLICY STUDY REPORTS ON REAUTHORIZATION

Recommendations from TRB Policy Study reports were adopted in several provisions of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), demonstrating the value Congress places on the work provided by the experts who donate their time to serve on TRB committees and on the processes TRB follows to ensure balanced, objective analyses.

**Advanced Research.** In Special Report 261, *The Federal Role in Highway Research and Technology*, the Research and Technology Coordinating Committee (RTCC) recommended a substantial increase in the Federal Highway Administration's (FHWA) allocation of federal highway research funds for advanced research. Advanced research is higher risk and longer term than applied research; moreover, advanced research does not have an immediate application but may lead to substantial improvements in processes and products. In the Research, Technology, and Education Section (5201) of SAFETEA-LU, Congress authorized \$70 million for advanced research, a manifold increase over the \$6 million available under the Transportation Equity Act for the 21st Century (TEA-21).

**FHWA Research Processes.** The RTCC also recommended that FHWA set research priorities with input from stakeholders and award contracts competitively, under a merit review process. The Basic Principles Governing Research and Technology Investments, cited in the opening section of SAFETEA-LU Title V: Research, adopt these recommendations.

**Workforce Training.** Special Report 275, *The Transportation Workforce Challenge: Recruiting, Retaining, and Training Qualified Workers for Transportation and Transit Agencies*, recommended an increase in federal funds for education and training of transportation agency employees. Another recommendation was that agencies should partner with universities and colleges to develop courses and curricula to meet workforce needs. SAFETEA-LU Section 5204: Training and Education adopts these recommendations.

**Congestion Mitigation and Air Quality Improvement (CMAQ) Program.** Special Report 264, *The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience*, urged Congress to retain CMAQ but also recommended the rigorous evaluation of a sample of projects to improve the program's effective-



ness. In Section 1808(f): Addition to CMAQ Projects, SAFETEA-LU retains and expands the CMAQ program and adopts the recommendation for conducting evaluations.

**Strategic Highway Research Program (SHRP) II.** Special Report 260, *Strategic Highway Research: Saving Lives, Reducing Congestion, Improving Quality of Life*, recommended the creation of a new SHRP that would have many of the features of the first program, but with a different set of priorities. The committee's main research recommendations were adopted in Section 5208: Transportation Research and Development Strategic Planning. Congress authorized the program at approximately \$52 million per year for 2006 through 2009.

**Surface Transportation Environment and Planning Cooperative Research Program.** Special Report 268, *Surface Transportation Environmental Research: A Long-Term Strategy*, recommended that Congress fund the environmental cooperative research program included in TEA-21 but for which funds were not authorized. Section 5207 adopts the committee's recommendations for research quality control and provides more than \$15 million per year for the program.

**Hazardous Materials Transportation Cooperative Research.** Special Report 283, *Cooperative Research for Hazardous Materials Transportation: Defining the Need, Converging on Solutions*, recommended the creation of a pilot program of cooperative research and identified several important research topics. In Section 7131: Hazardous Materials Research Projects, Congress authorized \$5 million for research identified by the committee and asked the Secretary of Transportation to make a recommendation within 6 months about a permanent cooperative research program.

use; summarize what is known about these relationships, including the strengths and magnitude of any causal connections; draw implications for policy; and recommend priorities for research.

In contrast to the well-documented causal connection between physical activity and health, the role of the built environment in physical activity levels is a relatively new area of inquiry. Evidence supporting a causal relationship is sparse.

The committee concludes that built environments designed to facilitate more active lifestyles and to reduce barriers to physical activity are desirable.<sup>3</sup> The available evidence, however, is not sufficient to identify specific changes that would have the most impact on physical activity levels and health outcomes.

The committee therefore recommends a continuing and well-supported research effort. Priorities for research include interdisciplinary approaches and international collaboration, more complete conceptual models, better research designs, and more detailed examination and matching of specific characteristics of the built environment with different types of physical activity. Federal funding is needed to support high-pay-off but difficult-to-finance multiyear longitudinal studies, rapid response capability to evaluate natural experiments as they arise, and additions to national databases to enable research into important causal connections.

To meet these needs, the committee recommends that the U.S. Department of Health and

Human Services and the U.S. Department of Transportation work together to shape an appropriate research agenda and to present to Congress a program of research with a defined mission and a recommended budget.

This project was a joint effort with the Institute of Medicine of the National Academies and was funded by the Robert Wood Johnson Foundation and the Centers for Disease Control and Prevention. Susan Hanson, Clark University, chaired the committee.

*Cooperative Research for Hazardous Materials Transportation: Defining the Need, Converging on Solutions*  
(Special Report 283)

This report examines the idea of a cooperative research program for hazardous materials transportation. Under the program, the many parties involved would work together to define, coordinate, and oversee research into shared problems and issues of concern. The committee considered whether a national cooperative research program would be a useful supplement to ongoing research.

The study committee believes that cooperative research will prove useful—and may be essential—in ensuring the safety and security of hazardous materials transportation.<sup>4</sup> A cooperative research program could provide objective information and analyses for regulatory and investment decision making, develop plans for hazardous materials emergencies, and improve the capabilities of emergency responders.

The committee suggests establishing a pilot program to demonstrate the potential of—and to build interest in—a larger-scale program. The committee recommends a structure for the pilot program and outlines approaches for financing, governance, and management.

The trial program would enable stakeholders and the hazardous materials sector to judge the desirability of creating a larger and more lasting national cooperative research program. The committee outlines ways to finance, govern, and manage a full-scale program.

Four federal agencies with roles in ensuring the safety and security of hazardous shipments sponsored the study: the Research and Special Programs Administration (now the Research and Innovative Technology Administration), the Federal Motor



<sup>3</sup> [www.TRB.org/publications/sr/sr282.pdf](http://www.TRB.org/publications/sr/sr282.pdf).



At a Washington, D.C., press briefing in January for the republication release of Special Report 282, *Does the Built Environment Influence Physical Activity?* Susan Hanson, who chaired the authoring committee for the study, summarizes the findings.

<sup>4</sup> [www.TRB.org/publications/sr/sr283.pdf](http://www.TRB.org/publications/sr/sr283.pdf).



Carrier Safety Administration (FMCSA), and the Federal Railroad Administration (FRA) of the U.S. Department of Transportation (DOT); and the U.S. Coast Guard of the U.S. Department of Homeland Security. Robert E. Gallamore, Northwestern University, chaired the committee.

Congress acted quickly on the committee's recommendations. The 2005 reauthorization of surface transportation programs assigned \$5 million for research on hazardous materials transportation topics identified by the committee.

### Letter Reports

#### *Review of the Federal Railroad Administration Research, Development, and Demonstration Programs (May 2005)*

For several years, TRB has convened a committee of experts to provide peer review of FRA's research and development activities. The activities focus on rail safety in support of rulemaking and on demonstrations of high-speed passenger rail technologies.

The committee's 2005 letter report summarizes the major themes in recommendations and discussions with FRA staff over the past 3 years.<sup>5</sup> The committee notes the valuable work by FRA staff in the conduct of the research projects. The committee expresses encouragement with the progress on the Nationwide Differential Geographic Positioning System network—essential for implementing positive train control—and with the allocation of resources for the completion of the project; urges FRA to complete the remaining Next-Generation High-Speed Rail projects and report on the results; commends FRA for the plan to update the 5-year

strategic plan, and recommends that FRA conduct research on performance-based safety regulations. Louis S. Thompson of Thompson, Galenson, and Associates, LLC, chaired the committee through mid-2005.

#### *Transit Research Analysis Committee Letter Report (May 2005)*

At the request of the Federal Transit Administration (FTA), TRB convened the Transit Research Analysis Committee (TRAC) to advise FTA in developing a strategic agenda for transit research and in identifying roles for FTA and industry stakeholders in pursuing the agenda. TRAC is modeled on TRB's Research and Technology Coordinating Committee (RTCC), which provides an ongoing review of FHWA's research program. Like RTCC, TRAC will provide high-level, strategic guidance, not advice on individual research projects.

The committee commends FTA's decision to develop a strategic research plan and to set major strategic research goals—appropriate high-level objectives for a federal agency.<sup>6</sup> The plan can be valuable as FTA works with stakeholders to advance the national transit research agenda.

One of the stakeholders is Congress, which in recent years has designated more earmarks in FTA's research program than in the research program of any other U.S. DOT administration. The committee recommends that FTA disseminate an augmented version of the strategic research plan by the beginning of fiscal year 2006, noting the need for evaluation methods to guide and sustain the projects and programs. FTA should ensure that the strategic research plan is effective as a communication tool, providing clear and consistent information for a variety of audiences with differing backgrounds and interests.

#### *Research and Technology Coordinating Committee Letter Report (June 2005)*

The summer meeting of the RTCC focused on FHWA's advanced research program and the relationships with universities in the conduct of research. Advanced research can be placed between basic research and applied research—advanced research is not intended to address a specific problem or to seek results for immediate implementation. Instead, advanced research aims at discovering bases for new directions in applied research that can lead to high payoffs.

Michael S. Townes (*at head of table, right*) chairs a meeting of the Transit Research Analysis Committee in the TRB conference room.

<sup>5</sup> <http://gulliver.trb.org/publications/reports/fraradd7.pdf>.

<sup>6</sup> [www.TRB.org/publications/reports/trac\\_june\\_2005.pdf](http://www.TRB.org/publications/reports/trac_june_2005.pdf).



In the 2001 report, *The Federal Role in Highway Research and Technology* (Special Report 261), the RTCC recommended devoting up to one-quarter of FHWA's research budget to advanced research.<sup>7</sup> Congress traditionally had authorized roughly \$1 million per year for advanced research; the authorization has increased to \$14 million annually under the new Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). In addition, a few FHWA research projects funded outside of this program also fit the category of advanced research.

Anticipating this increase, FHWA began holding forums and making plans for a larger program of advanced research. The RTCC encourages FHWA to consider the organization of the program and suggested models, such as the Defense Advanced Research Projects Agency and the National Science Foundation.<sup>8</sup> The committee notes that universities are well suited to conducting basic and advanced research.

*Review of the Oregon DOT Study on Bridge Shear*  
(June 2005)

At the request of Oregon DOT, TRB convened a committee of bridge experts to review a \$1.6 million study conducted by Oregon State University (OSU). Oregon DOT is responsible for more than 450 bridges built between 1946 and 1962 that have extensive cracking along main girders. Although girder cracks on bridges this old are not unusual, the number of bridges in Oregon with cracks and the extent of the cracking are unusual.

The OSU study was designed to assist Oregon DOT in evaluating bridges with cracked girders and in making decisions about posting, repair, and replacement. OSU instrumented and tested bridges in the field, conducted extensive laboratory tests on girders fabricated to replicate the girders that were cracking, and developed a complex model to assess the carrying capacity of cracked girders.

The TRB committee compliments the instrumentation and laboratory testing but recommends corroboration of the findings by assuring that the materials in the fabricated girders were representative of the bridges with cracks.<sup>9</sup> The

<sup>7</sup> www.TRB.org/publications/sr/sr261.pdf.

<sup>8</sup> http://gulliver.trb.org/publications/reports/rtcc\_may\_2005.pdf.

<sup>9</sup> www.TRB.org/publications/reports/ORBR\_ltr\_rpt\_june\_2005.pdf.



Members of the Committee for Review of the Oregon Department of Transportation Study on Bridge Shear traveled to Oregon to conduct a site inspection of bridges with cracked girders, as part of a peer review of an Oregon State University study.

committee notes that the model requires several improvements before Oregon DOT applies it to assess the carrying capacity and remaining service life of bridges with girder cracks. In addition, the committee points out that the patterns of cracking indicate that the problem is not caused solely by shear, which was the focus of the study.

*Ongoing Studies*

In addition to ongoing reviews of the research programs of FRA, FTA, and FHWA, the Policy Studies group is working on other important topics.

*Long-Term Viability of Fuel Taxes for Transportation Finance*

This self-initiated study, funded with assistance from FHWA and AASHTO, is describing the current policy framework of transportation finance, particularly the prospects for continued reliance on the gas tax for highway and transit funding. The committee is evaluating options for a long-term transition to sources other than fuel taxes. The study will be released in early 2006.



A self-initiated TRB study on alternatives to the fuel tax for financing highway and transit projects is slated for release in January 2006.



At the first meeting of the Committee for Determination of the State of the Practice for Metropolitan Area Travel Forecasting, (left to right) Michelle Pourciau, District Department of Transportation; Chair Martin Wachs, University of California—Berkeley; Michael Replogle, Environmental Defense; and (right) Thomas B. Deen, past TRB Executive Director, listen to remarks by Jerry Faris, Transportation Support Group.

#### *Transportation of Radioactive Waste*

Conducted in collaboration with the Nuclear and Radiation Studies Board, this study is examining the transportation of spent nuclear fuel and high-level radioactive waste in the United States. The product will be a high-level synthesis of key technical and societal issues for spent nuclear fuel and high-level radioactive waste transport, along with technical and policy options for addressing these issues and managing transportation risks. The Department of Energy, the Nuclear Regulatory Commission, the Electric Power Research Institute, U.S. DOT, and NCHRP have provided funding for the study, to be released in early 2006.

#### *Climate Change and Transportation*

The TRB Executive Committee has initiated a study of the effects of climate change on the U.S. transportation infrastructure. Funding is provided by U.S. DOT, the U.S. Army Corps of Engineers, the American Association of State Highway and Transportation Officials (AASHTO) through NCHRP, the Transit Cooperative Research Program, the Environmental Protection Agency, and TRB.

#### *Current and Future Supply of Highway Safety Professionals*

This study funded by FHWA and FMCSA is addressing the retirement of the first generation of highway safety professionals—particularly how to recruit, prepare, and train replacements—as well as other related issues.

#### *Determination of the State of Practice in Metropolitan Area Travel Forecasting*

Funded by FHWA and TRB, this project is assembling a synthesis of travel demand forecasting and modeling practice by metropolitan planning organizations (MPOs) and states. A consultant is

gathering extensive information about practices from a sample of MPOs and states.

#### *National Tire Efficiency Study*

In appropriations legislation for fiscal year 2004, Congress requested an assessment of the fuel economy, safety, and wear characteristics of tires with low rolling resistance. The National Highway Traffic Safety Administration is funding the project. The final report is expected in 2006.

#### *Research Priorities and Coordination in Highway Infrastructure and Operations Safety*

This pilot project funded by NCHRP and FHWA is examining ways to set priorities and to coordinate research in highway infrastructure and operations safety across federal, state, and private-sector research programs.

#### *Transportation Information Management: A Strategic Plan*

This study will provide strategic advice to the federal government and the states on a sustainable administrative structure and funding mechanism to meet the information services needs of the transportation sector, particularly of state DOTs. The committee will define the core services, identify ways to provide the services, and suggest options for funding. AASHTO's Standing Committee on Research requested the study and is providing funding through NCHRP. The report will be released early next year.



Mike Wischhusen (right), Michelin North America, describes the tire's main structural components, role in handling and traction, and energy use to the Committee for the National Tire Efficiency Study.

### Other Ongoing Studies

TRB is assisting other units of the National Research Council of the National Academies on studies such as Assessing Vulnerabilities Related to the Nation's Chemical Infrastructure; Assessment of U.S. Coast Guard Polar Icebreaker Roles and Future Needs; Federal Aviation Administration Safety Inspectors Staffing Standards; and Review of the Freedom Car Research Program.

## INFORMATION SERVICES

### Transportation Research Information Services

The Transportation Research Information Services (TRIS) database is the world's largest online bibliographic database of transportation information. TRIS contains more than 640,000 records of published and ongoing research in all modes and disciplines of transportation. Approximately 25,000 new records were added in 2005.

The database is available on the Internet as TRIS Online through the Bureau of Transportation Statistics' (BTS) National Transportation Library website.<sup>10</sup> TRB produces and maintains TRIS, and BTS makes TRIS accessible on the web without charge.

TRIS Online links records to the full text of electronic documents or to information about ordering from suppliers. More than 20,000 TRIS records are linked to the full text, and an additional 100,000 are linked for ordering from the publishers.

Approximately 9,000 users access TRIS Online each month. TRIS is also available on the Internet for a fee through Dialog, Inc., and as part of the TRANSPORT database, a cooperative effort between TRB and the International Transport Research Documentation database of the Organization for Economic Cooperation and Development (OECD). TRANSPORT is produced and distributed by Ovid-SilverPlatter.

In May 2005, TRB implemented a new data entry system for TRIS. The new system is web-based, offering more flexibility, as well as opportunities for expanding and enhancing the TRIS system.

### Research in Progress

The Research in Progress (RiP) website is a searchable database of more than 8,100 records of active or recently completed research projects.<sup>11</sup> Most of

<sup>10</sup> ntl.bts.gov/.

<sup>11</sup> rip.trb.org.



Polar icebreaker and research vessel, Coast Guard Cutter *Healy*, on its first voyage. TRB is working with the National Academies' Division on Earth and Life Studies on a study of U.S. Coast Guard polar icebreaker roles and future needs.

the RiP records are for projects funded by U.S. DOT and state DOTs but also include university transportation research.

State DOTs can add, modify, or delete records of research through a web-based data entry system. A current awareness service is available to notify users automatically about new project records in specified subject areas. In 2004, RiP began adding international project records from OECD's International Transport Research Documentation's Transportation Research in Progress Database. In spring 2005, FHWA's Turner-Fairbank Highway Research Center began to submit research projects directly into RiP.

The RiP webpage receives more than 32,000 visits per month. About 1,200 individuals from 59 countries subscribe to the RiP alerting service.

### TRB Library

The TRB Library is a small, specialized library that provides reference and information services to TRB sponsors, committee members, and staff. Many state DOTs regularly use the library services. The library contains a complete collection of TRB, Highway Research Board, Strategic Highway Research Program (SHRP), and Marine Board publications.

The TRB Library is included in the Transportation Library Catalog through the National Transportation Library and the Online Computer Library Center's WorldCat. The library produces and maintains the TRB Publications Index, which

TRB Associate Librarian Jessica Fomalont and staff regularly assist researchers by phone, online, and onsite in the reference reading room.



contains 22,000 records of all authored papers, articles, and reports published by TRB and SHRP since 1974.<sup>12</sup> The index allows browsing or searching the fields, and individual records are linked to TRB's Online Bookstore, an out-of-print order form, or the full-text electronic publication.

### SYNTHESIS OF INFORMATION REPORTS

Under the sponsorship of the Cooperative Research Programs administered by TRB, the Synthesis unit prepares reports on current practice and knowledge for a range of key highway and transit topics. Practitioners and researchers make extensive use of the reports.

A highway committee and a transit committee of the Cooperative Research Programs select the study topics each year. In 2005, 12 new highway and 6 new transit studies were selected. A consultant experienced in the topic area researches and writes each Synthesis report, with guidance from an expert panel.

A list of reports published in the past 12 months appears on pages 53 and 54. Approximately 3,500 copies of each report are published in hard copy, and 3,000 of these are distributed to state DOTs, transit agencies, and TRB topic-area subscribers. The reports also are posted on the TRB website.<sup>13</sup> In the 12-month period from September 1, 2004, to August 31, 2005, visitors to the TRB website viewed NCHRP Synthesis reports nearly

<sup>12</sup> <http://www4.trb.org/trb/onlinepubs.nsf/web/index>.

<sup>13</sup> Highway syntheses: [www.TRB.org/news/blurb\\_browse.asp?id=5](http://www.TRB.org/news/blurb_browse.asp?id=5); transit syntheses: [www.TRB.org/news/blurb\\_browse.asp?id=6](http://www.TRB.org/news/blurb_browse.asp?id=6).

4,200 times and Transit Cooperative Research Program Synthesis reports approximately 1,000 times.

TRB maintains an inventory of hard-copy Synthesis reports for sale. Illustrative highway and transit titles published in 2005 are listed in the box on this page. Synthesis reports may be ordered from the TRB Online Bookstore or by calling 202-334-3213.

### ILLUSTRATIVE SYNTHESIS REPORTS, 2005

#### *Synthesis of Highway Practice*

- 342 Chip Seal Best Practices
- 348 Improving the Safety of Older Road Users
- 352 Value Engineering Applications in Transportation
- 353 Inspection and Management of Bridges with Fracture-Critical Details

#### *Synthesis of Transit Practice*

- 58 Emergency Response Procedures for Natural Gas Transit Vehicles
- 62 Integration of Bicycles and Transit

### STAFF NEWS

- **Barbara Post**, Manager of Information Services, received an Individual Distinguished Service Award from the National Academies in October. Post has been with TRB for 25 years.
- The National Academies presented a Group Distinguished Service Award to the TRB Synthesis Unit: **Jon Williams**, Manager; **Donna Vlasak**, Senior Program Officer; **Don Tippman**, Editor; and **Cheryl Keith**, Senior Program Assistant.





# COOPERATIVE RESEARCH PROGRAMS

TRB administers four contract research programs:

- The National Cooperative Highway Research Program (NCHRP), sponsored by the American Association of State Highway and Transportation Officials (AASHTO) in cooperation with the Federal Highway Administration (FHWA);
- The Transit Cooperative Research Program (TCRP), sponsored by the Federal Transit Administration (FTA);
- The Airport Cooperative Research Program (ACRP), sponsored by the Federal Aviation Administration (FAA); and
- The Commercial Truck and Bus Safety Synthesis Program (CTBSSP), sponsored by the Federal Motor Carrier Safety Administration (FMCSA).

## NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP is an applied research program that responds to the needs of state highway and transportation departments by solving pressing operational problems. Although NCHRP accounts for a small percentage of the nation's annual investment in highway research, its close association with AASHTO and its position within the National

Academies have enabled the program to carry out important research resulting in practical products.

Since 1962, NCHRP has administered 1,164 research projects. More than 925 publications have appeared in the *NCHRP Report* and *NCHRP Synthesis of Highway Practice* series, in addition to 300 volumes of *Research Results Digest* and 48 of *Legal Research Digest*, as well as some 120 other documents published electronically.

NCHRP projects for federal fiscal year 2005 were placed under contract as funds became available in 2005. Proposal solicitations for 37 research projects in federal fiscal year 2006 (October 1, 2005, through September 30, 2006) were released starting in June 2005; depending on the availability of funding authorized in federal legislation, contracts should be executed in the first 3 months of 2006.

State planning and research funds will increase modestly under recent reauthorization, and NCHRP funding will increase proportionally. Funding available for NCHRP in fiscal year 2004 totaled about \$35.4 million, and the amount available for fiscal year 2005 will be approximately \$33 million.

AASHTO considered 163 problem statements submitted by states and by AASHTO committees for the fiscal year 2006 program. The quantity and quality of the requests ensure optimal use of the authorized funds. In September 2005, AASHTO



**Victor M. Mendez**  
Chair  
AASHTO Standing  
Committee on Research



**David Lee**  
Chair  
TCRP Oversight and  
Project Selection  
Committee



**Robert J. Reilly**  
Director  
Cooperative Research  
Programs



At a three-day meeting of the American Association of State Highway and Transportation Officials' Standing Committee on Research (SCOR) in March, SCOR Vice Chair Wesley Lum (*with hand raised*), California Department of Transportation, guides decision makers through project selection and allocation of funds for NCHRP projects in fiscal year 2006.

began to formulate the fiscal year 2007 program and will determine the program content in March 2006.

NCHRP reports published during the past 12 months are listed on page 53. A total of 261 projects were under contract as of September 1, 2005, with 84 additional projects under development or awaiting contract.

Each NCHRP study follows an approved research plan under the guidance of a panel of technical specialists and experienced practitioners. The panel defines the scope of work, selects the contractor under a competitive proposal process, and monitors the research from beginning to end. The panel's participation ensures the credibility of the research findings, facilitating adoption by AASHTO, state departments of transportation (DOTs), and other organizations.

NCHRP panels convened for more than 100 project meetings in 2005; panel members contributed more than 2,000 days of volunteer time to attend meetings, plus a comparable amount of time to review materials. NCHRP benefits from more than 1,700 volunteers who expend time and energy primarily for the challenges and the satisfaction of making significant contributions to the field.

Many NCHRP research projects have had a direct impact on practice through products such as specifications, manuals, and guidelines. NCHRP emphasizes working with the practitioners who will use the research results. The pro-

gram's close relationship with AASHTO committees is important in carrying out this goal—approximately 43 percent of the research funds for fiscal year 2006 is allocated for 24 projects requested by 13 AASHTO committees.

Experience has shown that AASHTO committees are more likely to use NCHRP research results when (a) the committee identifies and requests the research, (b) committee members serve on the advisory panel guiding the study, and (c) findings and recommendations are presented to the committee at the conclusion of the study. NCHRP projects frequently incorporate these three steps.

Many NCHRP projects are developing recommended revisions to AASHTO publications at the request of committees. When AASHTO adopts an NCHRP project's recommendations as a guide or specification, practitioners who may not be able to stay abreast of research results benefit from having the best information available through the AASHTO documents.

Details on the program from 1962 through 1988 can be found in *NCHRP Summary of Progress Through 1988*. Details on work since 1988 are available in *NCHRP Summary of Progress, December 31, 2005*, and on the web.<sup>1</sup>

NCHRP studies of particular importance to AASHTO that were completed during the past year are summarized in the following sections. All reports are available on the web.<sup>2</sup>

### ***Asset Management and Performance Measures***

Asset management is a business process that assesses the trade-offs among investment options to make cost-effective decisions. Governments at the local, state, and federal levels are investing significant sums of tax revenue in transportation infrastructure, and the public expects the investments to be well managed.

Project 20-57 developed two tools to support trade-off analysis for transportation asset management—AssetManager NT and AssetManager PT. AssetManager NT is a tool to analyze investment versus performance across highway infrastructure categories over a 10- to 20-year period. AssetManager PT is a tool to demonstrate the effects of investment choices on a short-term program of projects. Findings have been published as NCHRP Report 545, *Analytical Tools for Asset Management*,

<sup>1</sup> [www.TRB.org/nchrp](http://www.TRB.org/nchrp).

<sup>2</sup> [www.TRB.org/news/blurb\\_browse.asp?id=2](http://www.TRB.org/news/blurb_browse.asp?id=2).

and as a CD-ROM, *Software for Analytical Tools for Asset Management* (CRP-CD-57).

Performance measures are critical to the application of asset management. NCHRP Project 20-60, Performance Measures and Targets for Transportation Asset Management, has addressed this connection. The two-part research report, to be published as NCHRP Report 551, presents a comprehensive description of the state of the practice plus a framework for investigating and implementing performance measures to improve decisions about resource allocation.

### **Infrastructure Security**

Security remains a high priority for NCHRP, which has allocated nearly \$5 million in research to date. Much of this research is now being published as volumes in a series under NCHRP Report 525, *Surface Transportation Security*. The volumes now available are summarized below.

- Volume 1, *Responding to Threats: A Field Personnel Manual*, includes a draft template of basic security awareness training that can be redesigned as a pamphlet, glove-box brochure, or other user-specific document.
- Volume 2, *Information Sharing and Analysis Centers: Overview and Supporting Software Features*, provides background for decisions on how to organize and share security information across transportation organizations.
- Volume 3, *Incorporating Security into the Transportation Planning Process*, examines the status, constraints, opportunities, and strategies for incorporating security into transportation planning at the state and metropolitan levels.
- Volume 4, *A Self-Study Course on Terrorism-Related Risk Management of Highway Infrastructure*, provides general background on the topic.
- Volume 5, *Guidance for Transportation Agencies on Managing Sensitive Information*, provides information on identifying and controlling access to sensitive information.
- Volume 6, *Guide for Emergency Transportation Operations*, includes recommendations for the development of a formal program to improve the management of traffic incidents, natural disasters, security events, and other emergencies on the highway system. The volume outlines a coordinated, performance-oriented, all-hazard approach, called emergency transportation operations. Sections on leadership self-assessment and leadership guidance,



NCHRP Report 525 comprises a series dedicated to practical topics in infrastructure security.

intended for senior managers and policy makers, focus on the importance of a cohesive policy. The section on operations and technology self-assessment and guidance is for agency managers involved in developing, managing, and improving program processes, equipment, and relationships.

- Volume 7, *System Security Awareness for Transportation Employees* (CRP-CD-59), is an interactive, instructional CD-ROM for transportation department employees about effectively carrying out responsibilities for operational and infrastructure security.
- Volume 8, *Continuity of Operations Planning Guidelines for Transportation Agencies* (published jointly with TCRP), offers guidance for state and local transportation agencies in developing, implementing, and maintaining contingency plans and in training for continuity of operations.

### **Environmental Planning**

The AASHTO Standing Committees on Planning and on the Environment maintain direct involvement in NCHRP through Projects 8-36 and 25-25, respectively. These projects are designed to support the committees' work. Part of the NCHRP budget is set aside for each committee and then suballocated for studies. As studies are completed, the committees post the reports on the web.

NCHRP also conducts specific research projects on planning and the environment. Recently completed projects were published as follows:

- NCHRP Report 521, *Identification of Research Needs Related to Highway Runoff Management*, presents an analysis of research that would improve the management and control of highway water runoff.
- NCHRP Report 535, *Predicting Air Quality Effects of Traffic-Flow Improvements: Final*



NCHRP and TCRP jointly published a handbook to foster collaborative, multimodal decision making.

*Report and User's Guide*, includes a recommended methodology for predicting the long- and short-term mobile source emission impacts of projects to improve traffic flow.

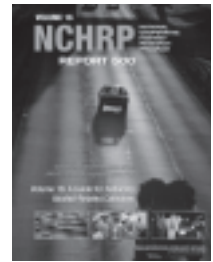
- NCHRP Report 536 (TCRP Report 106), *A Practitioner's Handbook—From Handshake to Compact: Guidance to Foster Collaborative, Multimodal Decision Making*, gives examples of collaboration in multimodal decision making and offers practical advice to transportation professionals interested in identifying, implementing, and sustaining collaborative activities.
- NCHRP Report 541, *Consideration of Environmental Factors in Transportation System Planning*, includes a process for integrating environmental factors in transportation system planning and decision making at the state, regional, and metropolitan levels.
- NCHRP Report 542, *Evaluating Cultural Resource Significance: Implementation Tools*, examines information technology tools designed to improve and streamline the National Register evaluation of cultural resources.
- NCHRP Report 548, *A Guidebook for Including Access Management in Transportation Planning*, assists transportation policymakers and practitioners in incorporating access management into transportation plans.
- NCHRP Report 550 (TCRP Report 110), *Commuting in America III*, provides information for policy discussion of commuting-related issues. The report principally applies special data sets prepared from journey-to-work data in the decennial census.



Delineation of turn paths for double left-turn lanes is included in research for NCHRP Report 500, Volume 12, *A Guide for Reducing Collisions at Signalized Intersections*.

## Highway Safety and Operations

Improving highway safety and operations is a primary goal of the transportation industry, and NCHRP devotes significant resources to the subject. Several projects were completed this year, including the series of volumes and guides published as NCHRP Report 500, *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan*. Of an expected 22 volumes and guides in the Report 500 series, 17 have been completed:



- Volume 1, *A Guide for Addressing Aggressive-Driving Collisions*;
- Volume 2, *A Guide for Addressing Collisions Involving Unlicensed Drivers and Drivers with Suspended or Revoked Licenses*;
- Volume 3, *A Guide for Addressing Collisions with Trees in Hazardous Locations*;
- Volume 4, *A Guide for Addressing Head-On Collisions*;
- Volume 5, *A Guide for Addressing Unsignalized Intersection Collisions*;
- Volume 6, *A Guide for Addressing Run-Off-Road Collisions*;
- Volume 7, *A Guide for Reducing Collisions on Horizontal Curves*;
- Volume 8, *A Guide for Reducing Collisions Involving Utility Poles*;
- Volume 9, *A Guide for Reducing Collisions Involving Older Drivers*;
- Volume 10, *A Guide for Reducing Collisions Involving Pedestrians*;
- Volume 11, *A Guide for Increasing Seatbelt Use*;
- Volume 12, *A Guide for Reducing Collisions at Signalized Intersections*;
- Volume 13, *A Guide for Reducing Collisions Involving Heavy Trucks*;
- Volume 14, *A Guide for Reducing Collisions Involving Distracted and Drowsy Drivers*;
- Volume 15, *A Guide for Enhancing Rural Emergency Medical Services*;
- Volume 16, *A Guide for Reducing Alcohol-Related Collisions*; and
- Volume 17, *A Guide for Reducing Work Zone Collisions*.

Two other publications were released on related topics:



Recommended guidelines for curb and barrier installations are presented in NCHRP Report 537.

- NCHRP Report 537, *Recommended Guidelines for Curb and Curb-Barrier Installations*, presents the findings of a research project to develop guidelines for the use of curbs and curb-guardrail combinations on high-speed roadways.
- NCHRP Report 524, *Safety of U-Turns at Unsignalized Median Openings*, offers guidelines for locating and designing unsignalized median openings. A methodology is included for comparing the relative safety performance of different designs.

### Bridges and Structures

The AASHTO Highway Subcommittee on Bridges and Structures has a long-standing association with NCHRP projects, particularly in refining and expanding the load and resistance factor design (LRFD) procedures. AASHTO specifications have incorporated many NCHRP research findings.

Recent publications on bridge- and structure-related subjects—including work completed under Project 20-7, which provides support to the AASHTO Standing Committee on Highways—are as follows:

- NCHRP Report 543, *Effective Slab Width for Composite Steel Bridge Members*, presents findings on the effective width of composite steel bridge members.
- NCHRP Project 20-7, Task 199, Update of the Strategic Plan for Bridge Engineering, adjusts

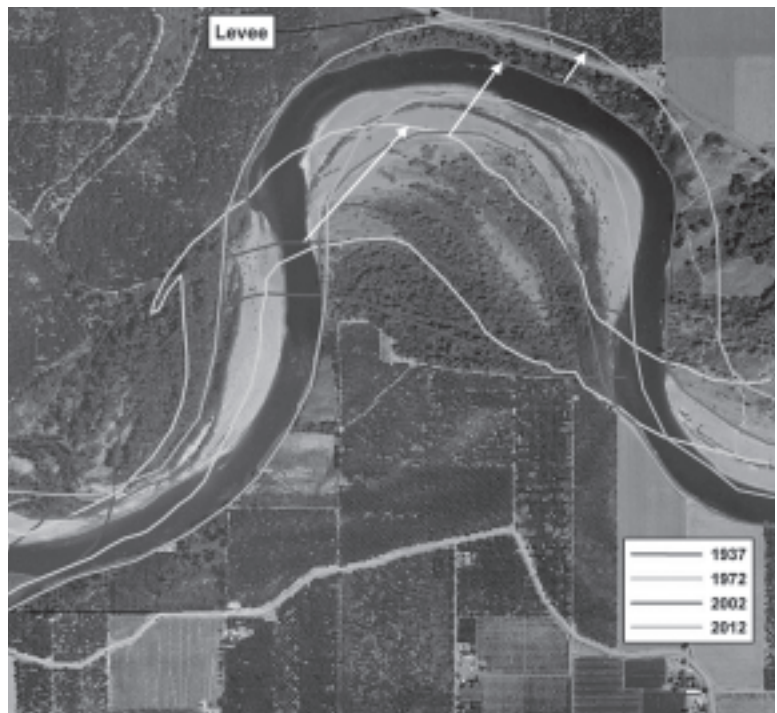
the strategic plan prepared 5 years ago. Representatives from the AASHTO Highway Subcommittee on Bridges and Structures, FHWA, academia, and the consultant community participated in an April 2005 workshop to update the plan.

- NCHRP Project 20-7, Task 183, LRFD Foundation Design Implementation and Specification Development, developed and populated a database for efficient computation of deep foundation resistance, which will help simplify the process for calibrating resistance factors.

### Hydrology and Hydraulics

The three most important considerations in designing infrastructure facilities are said to be drainage, drainage, and drainage. NCHRP has devoted attention to this topic, and findings from two completed projects were published this year:

- NCHRP Report 533, *Handbook for Predicting Stream Meander Migration*, presents a practical methodology for predicting the rate and extent of channel migration near transportation facilities. An accompanying CD-ROM, NCHRP Report 533 *Supporting Software* (CRP-CD-48), contains a database logger and channel migration predictor.



NCHRP Report 533 describes a methodology for predicting stream migration near highway infrastructure and includes a CD-ROM with software. Historic and predicted channel migration are shown for a bend in the Sacramento River, 1937–2012.

- NCHRP Report 544, *Environmentally Sensitive Channel- and Bank-Protection Measures*, provides selection criteria, design guidelines, and techniques for the type, size, and placement of measures to protect environmentally sensitive channels and banks.

### Pavements

NCHRP has released final versions of the recommended *Mechanistic–Empirical Pavement Design Guide* and companion software. The guide and software are available on the web, allowing potential users to evaluate the versions in typical applications or in specially tailored situations. Follow-on NCHRP projects are conducting additional reviews and will incorporate enhancements. Other reports published this year for pavement and materials engineers include the following:

- NCHRP Report 530, *Evaluation of the Indirect Tensile Test (IDT) Procedures for Low-Temperature Performance of Hot-Mix Asphalt*, evaluates procedures in AASHTO Standard Method of Test T322-03.
- NCHRP Report 531, *Relationship of Air Voids, Lift Thickness, and Permeability in Hot-Mix Asphalt Pavements*, recommends guidelines for hot-mix asphalt pavement construction to achieve satisfactory levels of in-place air voids and permeability.
- NCHRP Report 538, *Traffic Data Collection, Analysis, and Forecasting for Mechanistic Pavement Design*, gives guidance for collecting traffic data for pavement design and includes TrafLoad software for analyzing traffic data and for producing the traffic data inputs for mechanistic pavement analysis and design.

International scan group inspects the sound intensity setup on a light vehicle at French test track for quiet pavements.



- NCHRP Report 539, *Aggregate Properties and the Performance of Superpave-Designed Hot-Mix Asphalt*, examines the technical literature since the conclusion of the first Strategic Highway Research Program in 1993.
- NCHRP Report 547, *Simple Performance Tests: Summary of Recommended Methods and Database*, summarizes key information on three simple performance tests for permanent deformation of hot-mix asphalt.

### Design, Construction, and Maintenance

The design, construction, and maintenance of highway facilities are the primary business of state DOTs. NCHRP research supports improvements in these areas, as documented in the following publications:

- NCHRP Report 523, *Optimal Timing of Pavement Preventive Maintenance Treatment Applications*, describes a methodology to determine the timing for the application of preventive maintenance treatments to flexible and rigid pavements. The OPTime software tool—which incorporates the methodology—is available for downloading on the NCHRP website.<sup>3</sup>
- NCHRP Report 540, *Guidelines for Early Opening-to-Traffic Portland Cement Concrete for Pavement Rehabilitation*, is a guide to early-opening-to-traffic concrete in pavement rehabilitation, to reduce roadway closure and to accrue economic and environmental benefits. The guidelines address proportioning, testing, and construction.
- NCHRP Project 20-7, Task 190, *Develop Strategy for the Testing and Evaluation of Durable Striping Materials for High Traffic Areas and Mountain Passes*, provides a strategy for evaluating and testing materials for the best visibility of pavement markings under extreme conditions. Also presented are guidelines on cost, materials selection, specifications, construction and maintenance, and performance measures.
- NCHRP Project 20-7, Task 172, *Design–Build Request-for-Proposals Specification Guide*, assembles recommendations for an AASHTO design–build guide that will assist contracting agencies in preparing requests for qualifications and proposals and in selecting a proposal.

<sup>3</sup> [www.TRB.org/publications/nchrp/optime/optime.iso](http://www.TRB.org/publications/nchrp/optime/optime.iso).

## Continuing Projects

NCHRP supports several continuing projects with studies both completed and under way:

- Project 20-5, Synthesis of Information Related to Highway Problems, produces state-of-the-practice reports.
- Project 20-6, Legal Problems Arising out of Highway Programs, conducts reviews of case law and publishes results in the *NCHRP Legal Research Digest* series.
- Project 20-30, NCHRP–Innovations Deserving Exploratory Analysis (IDEA), funds projects to demonstrate innovative concepts or products (see Special Programs Division section, page 43).
- Project 20-36, Highway Research and Technology: International Information Sharing, provides financial support for state DOT representatives to participate in foreign meetings and to host foreign experts in the United States. The project also shares expenses with FHWA for international scanning tours.
- Project 20-68, U.S. Domestic Scan Program, is starting up and will operate similarly to the international scan program.

## TRANSIT COOPERATIVE RESEARCH PROGRAM

Authorized by the Intermodal Surface Transportation Efficiency Act (ISTEA) and initiated under TRB management in July 1992, TCRP is supported by annual grants from FTA. The TCRP Oversight and Project Selection (TOPS) Committee chooses research for the program; the committee also serves as the board of directors of the Transit Development Corporation (TDC), a nonprofit educational and research affiliate of the American Public Transportation Association (APTA). A three-way memorandum of agreement by FTA, TDC, and TRB outlines the program's operating procedures. In its first 13 years, TCRP has undertaken 435 studies; of these, 378 have been completed and 57 are in progress.

TCRP receives submissions of research problem statements throughout the year and has considered more than 2,000 since 1992. The first 145 research projects advertised by TCRP attracted a total of 1,062 proposals from 512 different proposers—an average of 7.3 proposals per project. In early 2005, TCRP issued a call for fiscal year 2006 problem statements to more than 4,000 individu-



David Lee, General Manager, Connecticut Transit, and Chair of the TCRP Oversight and Project Selection Committee (TOPS); Robert Reilly, Director, Cooperative Research Programs; and Anthony Kouneski, Executive Vice President, Member Services, American Public Transportation Association, consider plans for TCRP projects in 2006 at TOPS meeting in October.

als and organizations in the transit community, emphasizing research consistent with FTA's Strategic Initiatives and the TCRP Strategic Plan. TCRP received and processed 102 problem statements for fiscal year 2006.

TRB submits quarterly progress reports on TCRP to FTA, describing the work accomplished during the quarter and anticipated for the next period. Details of the program's progress since 1992 can be found in the December 2005 TCRP Annual Report.

TCRP panels have the same responsibilities as NCHRP panels for developing requests for proposals, selecting contractors, and monitoring the research. TCRP panels held 56 meetings during calendar year 2005, involving approximately 525 professionals and representing more than 750 days of volunteer time. Among these were 19 panel meetings to prepare research project statements and to select research agencies; 27 interim project



TCRP Manager Christopher Jenks, with TOPS member Ann August, Executive Director, Santee Wateree Regional Transportation Authority, presents a report on projects at the TOPS meeting in October.

meetings to review project status at midcourse; and 10 meetings on special projects. The TOPS Committee also met twice in the year.

TCRP published 30 project reports in 2005, bringing the total to 371 publications: 134 Reports, 63 Syntheses of Transit Practice, 71 Research Results Digests, 22 Legal Research Digests, 33 IDEA reports, 26 web documents, and 22 CD-ROMS.

### **Research Dissemination**

Dissemination of TCRP research results is a concerted activity. APTA administers TCRP Project J-1, Dissemination and Implementation of TCRP Research Findings, to distribute TCRP research materials to targeted audiences. This outreach includes various forms of promotion, such as the Internet. APTA also disseminates TCRP information through *Passenger Transport*, the industry's weekly newspaper, as well as through announcements, press releases, and news reports.

APTA solicits research problem statements; conducts surveys; arranges for workshops, field visits, and training; and oversees other activities to ensure that public transportation industry practitioners receive and implement TCRP research results. The Conference of Minority Transportation Officials also distributes TCRP materials through the TCRP Ambassador Program, which maintains a roster of transit professionals who promote TCRP project findings to practitioners.

The J-1 Program has developed a TCRP dissemination website maintained by APTA; has distributed publications catalogs on general and rural topics; has coordinated industry mailings and surveys to ascertain the levels of use and awareness of the program's products; and has produced informational CDs. TCRP reports are available online through APTA's TCRP dissemination website<sup>4</sup> and through TRB's TCRP web page.<sup>5</sup>

The following TCRP activities of particular interest were in progress or were completed during the year.

### **Public Transportation Security**

Public transportation security remains a major focus for TCRP. Since September 11, 2001, the TOPS Committee has allocated \$2.75 million to security-related research.

<sup>4</sup> <http://www.tcrponline.org/index.cgi>.

<sup>5</sup> [www.TRB.org/tcrp](http://www.TRB.org/tcrp).

A project initiated in 2005—Project J-10J, Public Transportation Passenger Security Inspections: A Guide for Decision Makers—will develop guidance for transit agencies addressing the considerations associated with the introduction of transit passenger searches and screening. A technical panel was formed, and work is under way.

TCRP Report 86 constitutes a series of volumes on transit security research. Eight volumes have been published, covering a variety of topics. Two volumes were released in 2005—Volume 7, *Public Transportation Emergency Mobilization and Emergency Operations Guide*; and Volume 8, *Continuity of Operations Planning Guidelines for Transportation Agencies* (jointly funded with NCHRP). Subsequent volumes in the Report 86 series will examine emergency training drills, simulations, and exercises; transportation tunnel security; security measures for ferry transit systems; and security inspections.

In addition, under Project J-10D, a pilot course was prepared on developing and updating security plans for rural, small urban, and community-based transit systems. The course will be offered through the National Transit Institute.

Five security-related projects are also under way through the Transit IDEA Program: bioterrorism detection technology; counterterrorism chemical detector; detection of radioactivity; chemical and biological decontamination systems; and biometric notification network for transit employees. These IDEA projects involve transit agencies in testing experimental technologies.

### **Transit Vehicles and Maintenance**

During 2005, work continued on TCRP Project C-14, Technical Support for Development of Transit Bus Standards. The project established a transit industry-driven process for producing bus standards and recommended practices. Administered by APTA, the process is guided by the APTA Bus Standards Policy and Planning Committee. In 2005, standards and recommended practices were developed for bus brakes, for engine cooling systems, and for heating, ventilation, and air conditioning.

Work continues on a recommended practice for transit operator training; a standard for transit vehicle data recorders; technical specifications for hybrid-electric transit buses; standards and recommended practices for bus fire prevention, including equipment specifications; bus rapid transit vehicle

Driver performs a seat check, part of security routine.





standards; bus maintenance training; and recommended practices to reduce bus interior noise.

TCRP Report 109, *Guidebook for Developing and Sharing Transit Bus Maintenance Practices*, presents a methodology for developing and sharing bus maintenance practices, along with case studies applying the methodology to seven maintenance problem areas. The report also promotes a TRB Web Board for transit maintenance managers to share and discuss bus maintenance practices.<sup>6</sup>

TCRP Project E-6, *Transit Bus Mechanics: Building for Success*, is developing a series of tests through the Institute for Automotive Service Excellence (ASE), to certify transit bus mechanics. The tests will be similar to those for the automotive, medium- and heavy-duty truck, and school bus industries. The project panel has identified 11 subject areas for testing.

ASE plans to offer the first transit tests—on electronics and electrical systems and on brakes—in spring 2006. The tests are in development, guided by working groups of subject matter experts. Two or three tests will be added each year. The test development involves coordination with organized labor to ensure the availability of relevant training. The ASE tests and associated training will serve as a major opportunity for developing the bus maintenance workforce.

TCRP Synthesis 58, *Emergency Response Procedures for Natural Gas Transit Vehicles*, offers insights into current practices in emergency responses to incidents involving natural gas transit vehicles. The synthesis is intended for first responders to natural gas incidents—emergency response professionals, such as police and firefighters; transit agency operations and maintenance employees, police, and security guards; and certain members of the general public. The synthesis includes case studies of procedures for handling facility and vehicle emergencies.

TCRP Synthesis 61, *Maintenance Staffing Levels for Light Rail Transit Systems*, documents light rail transit staffing practices, covering such issues as maintenance functions, the requirements during new light rail start-up, and management approaches. Case studies highlight maintenance staffing practices at four U.S. transit agencies, with supplemental information from FTA's National Transit Database on the operating characteristics of U.S. light rail transit systems.

<sup>6</sup> <http://webboard.TRB.org/~A1E16/login>.



Responding to a natural gas release in a fueling station is one of many emergency scenarios covered in TCRP Synthesis 58.

### **Track-Related Research**

Three new volumes were published in the TCRP Report 71 series on track-related research—Volume 4, *Friction Control Methods Used by the Transit Industry*; Volume 5, *Flange Climb Derailment Criteria and Wheel–Rail Profile Management and Maintenance Guidelines for Transit Operations*; and Volume 6, *Direct-Fixation Track Design—Specifications, Research, and Related Materials*.

- Volume 4 provides information on onboard and wayside friction control applications to reduce noise, to reduce the wear of wheels and rails, to control truck steering forces, and to reduce train energy. The report includes guidelines for selecting various types of friction control technologies.
- Volume 5 presents flange climb derailment criteria and offers guidance on wheel and rail maintenance practices.
- Volume 6 offers guidance on the design and construction of direct-fixation track systems.



The TCRP Report 71 series continues to report advances in track-related research.

The report includes track-design principles and material evaluation methods for direct-fixation fasteners and track, as well as example specifications with commentary for direct-fixation fasteners, direct-fixation fastener qualification and production tests, track construction, and materials. The report also provides data, evaluations, field reviews, and analyses of a variety of direct-fixation fasteners.

### **Car Sharing**

TCRP Report 108, *Car Sharing: Where and How It Succeeds*, guides transit agencies, government officials, and other interested parties in developing successful car-sharing services in transit and other settings. The report presents the state of the practice; analyzes the potential market; describes the potential impacts; discusses some of the ways organizations have promoted car sharing; identifies the most important barriers and how they can be overcome; reviews procurement mechanisms and evaluation techniques; and analyzes models for establishing car-sharing services.

### **Planning**

TCRP Report 95, *Traveler Response to Transportation System Changes: Third Edition*, is an up-to-date and expanded sourcebook on how transportation system changes and built environment options affect travel demand; the report will comprise 19 volumes. The nine volumes previously published address park-and-ride pools; demand-responsive services including Americans with Disabilities Act (ADA) complementary paratransit services; transit scheduling and frequency; bus routing and coverage; transit information and promotion; transit pricing and fares; road value pricing; land use and site design; and parking management and supply.

Two additional volumes were released in 2005, focusing on vanpools and buspools and on parking pricing and fees. The remaining eight chapters will be published in 2006.

TCRP Report 107, *Analyzing the Effectiveness of Commuter Benefits Programs*, provides guidance on evaluating the effectiveness of a transit benefits program and on designing and implementing a program to meet goals and objectives. The report also summarizes research on the effects of transit benefits programs on travel behavior and on transit system ridership, revenues, and costs. The findings rely on a review of 21 surveys conducted by

transit agencies and other organizations in 12 metropolitan areas, an analysis of worksite trip reduction records from three regions with mandatory employer trip reduction programs, and interviews with transit agencies.

TCRP Research Results Digest 69, *Evaluation of Recent Ridership Increases*, assesses key actions, initiatives, and circumstances that may have contributed to the increased ridership at 28 transit agencies across the nation from 2000 to 2002.

TCRP Synthesis 63, *On-Board and Intercept Transit Survey Technologies*, documents and summarizes transit agency experience with planning and implementing on-board and intercept surveys—self-administered surveys distributed on-board buses and rail cars in stations, as well as interviews in the same settings. The synthesis covers a range of issues to be addressed in planning for a survey. Information was provided by 52 transit agencies from across the United States.

### **Legal Issues in Transit**

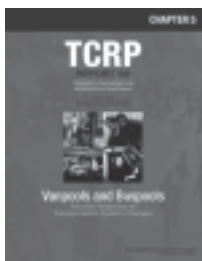
TCRP Project J-5, *Legal Aspects of Transit and Intermodal Transportation Programs*, reports on issues associated with transit and intermodal law. Each document provides transit attorneys with authoritative, well-researched, specific information on legal issues and problems of national significance to the transit industry.

Three publications were issued on topics in transit law—TCRP Legal Research Digest 20, *Transit Passengers and Civil Rights*; Legal Research Digest 21, *Trademarking and Licensing for Transit Providers*; and Legal Research Digest 22, *The Case for Searches on Public Transportation*. In addition, Selected Studies in Transportation Law, Volume 7: *Transit Charter Bus Service Decisions and Documents*, a compilation of FTA decisions and documents dealing with interpretations of the charter bus service requirements, was released on CD-ROM.

### **Electronic Business Strategies**

TCRP Report 84 comprises a multipart series on electronic business strategies for public transit—designated as e-transit. The objective is to introduce electronic business strategies to public transportation and mobility management.

Previous publications in the Report 84 series included reports on the transit supply chain, on application service providers, on using the Internet for transit training and certification, on



TCRP Report 95, on traveler responses to system changes, will complete publication of all 19 chapters in 2006.

advanced features of transit websites, and on a concept for an e-transit reference enterprise architecture. In 2005, two additional volumes of Report 84 were published—Volume 6, *Strategies to Expand and Improve Deployment of ITS in Rural Transit Systems*, and Volume 7, *The Successful Adoption of Web-Based Collaborative Software*.

Volume 6 describes how Internet and communication technologies are deployed by rural transit agencies. Also presented are examples of statewide intelligent transportation systems (ITS) plans that include provisions for rural initiatives, as well as an overview of considerations in planning for rural ITS implementation.

In Volume 7, three case studies show how web-based tools have assisted in controlling and managing active and planned construction projects, including scheduling and costs. The report also examines how web-based collaborative software has helped engineers share knowledge across programs and contracts, creating and enhancing supply chain relationships.

### **Organizational Strategic Planning**

TCRP Synthesis 59, *Strategic Planning and Management in Transit Agencies*, summarizes the state of the practice in strategic planning and management at transit agencies. Case studies reveal how five transit agencies have implemented comprehensive or innovative strategic planning processes and practices.

### **Transit Lessons from Abroad**

Since 1994, TCRP Project J-3, International Transit Studies Program, has sponsored 23 leadership development missions. More than 300 transit professionals have participated in missions to Europe, Asia, Canada, South America, New Zealand, and Australia in the past 11 years. The program aims to expand the horizons of U.S. transit managers. The findings and observations of the participants are published in 18 TCRP Research Results Digests to date.<sup>7</sup>

<sup>7</sup> TCRP Research Results Digests 20, 22, 27, 31, 33, 36, 42, 47, 49, 53, 54, 58, 62, 64, 66, 68, 70, and 71.



## **AIRPORT COOPERATIVE RESEARCH PROGRAM**

ACRP was authorized in December 2003 in the Vision 100: Century of Aviation Reauthorization Act. ACRP began in October 2005; the program is sponsored by FAA and managed by TRB. Representatives of airport operating agencies—serving as an independent governing board—provide program oversight and governance.

ACRP will carry out applied research on problems shared by airport operating agencies but not adequately addressed by federal research programs. The need for ACRP was identified in a study sponsored by FAA and published as TRB Special Report 272, *Airport Research Needs: Cooperative Solutions*, in 2003. ACRP will undertake research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration.

The Vision 100 Act authorized \$10 million per year for ACRP in fiscal years 2004 through 2007. The timing of the approval, however, precluded appropriation of funds for the program in fiscal year 2004. The annual federal appropriation process will determine ACRP funding for each fiscal year. FAA made sufficient funds available in 2004 to enable the organization and preparation for ACRP to begin research with \$3 million appropriated in fiscal year 2005.

FAA, U.S. DOT, and the National Academies have executed a Memorandum of Agreement. The



ACRP governing board, established according to the terms of the memorandum, will meet in January 2006 to establish operating procedures and to prioritize research needs for the program.

## COMMERCIAL TRUCK AND BUS SAFETY SYNTHESIS PROGRAM

CTBSSP is a cooperative research program sponsored by FMCSA and administered by TRB. The program was authorized in late 2001 to support FMCSA's safety research programs.

The annual level of funding provided by FMCSA—typically \$100,000 to \$400,000—determines the number of synthesis studies the program can initiate. The reports summarize current practice in a specific technical area in commercial truck and bus safety, usually through a literature search and a survey of organizations such as state DOTs, enforcement agencies, commercial truck and bus companies, or other appropriate groups.

The program is modeled after the successful synthesis programs of NCHRP and TCRP. The primary audiences for the syntheses are practitioners in a variety of settings who are using diverse approaches to address the issues or problems described in the study.

A program oversight panel monitors CTBSSP and program procedures; selects synthesis topics annually, after periodic industrywide solicitations; refines synthesis scopes; selects researchers to prepare each synthesis; reviews products; and makes publication recommendations.

The program oversight panel has authorized 16 synthesis topics. During 2005, four syntheses were published:

- CTBSSP Synthesis 6, *Operational Differences and Similarities Among the Motorcoach, School Bus, and Trucking Industries*;
- CTBSSP Synthesis 7, *Motorcoach Industry Hours of Service and Fatigue Management Techniques*;
- CTBSSP Synthesis 8, *Commercial Motor Vehicle Driver Safety Belt Usage*; and
- CTBSSP Synthesis 9, *Literature Review on Health and Fatigue Issues Associated with Commercial Motor Vehicle Driver Hours of Work*.

CTBSSP Synthesis 10, *Alternative Commercial Truck and Bus Inspection Strategies*, has entered the publication process, with release scheduled for early 2006.

Five additional synthesis studies are in development:

- MC-12, *Commercial Motor Vehicle Driver Training Curricula and Delivery Methods and Their Effectiveness*;
- MC-13, *Commercial Motor Vehicle Carrier Safety Management Certification*;
- MC-14, *The Role of Safety Culture in Preventing Commercial Motor Vehicle Crashes*;
- MC-15, *The Impact of Behavior-Based Safety Techniques on Commercial Motor Vehicle Drivers*; and
- MC-16, *Health and Wellness Programs for Commercial Motor Vehicle Drivers*.

These syntheses are expected to be completed in late 2006.

## STAFF NEWS

- **Natalie L. Barnes** joined the CRP Publications Office as Editor. She previously worked at the Proposal Development and Publications Center at Science Applications International Corporation.
- **Andrew C. Lemer** joined the NCHRP staff in August as a Senior Program Officer. Lemer was Director of the National Research Council's Building Research Board from 1988 to 1993 and has managed NCHRP projects and contributed to TRB policy studies as a consultant.
- **Katherine Bittner** took the position of Program Assistant, CRP, and **Winnie Matshona** came aboard as Senior Program Assistant, NCHRP.
- **Adrienne Blackwell**, Senior Program Assistant, NCHRP, received an Individual Distinguished Service Award from the National Academies in October.
- **Yazhi Huang** of the Transportation and Technology Academy, Cardozo Senior High School, Washington, D.C., is working as a CRP intern.





## SPECIAL PROGRAMS

The TRB Special Programs Division administers short-term investigations of innovative concepts and advises the federal government on the conduct of long-term research studies.

The Division's Innovations Deserving Exploratory Analysis (IDEA) programs foster new and unconventional approaches to advancing transportation practice in transit, highways, high-speed rail, intelligent transportation systems, and transportation safety.

Supported by Division staff, committees of experts in various aspects of highway technology monitor and advise the Federal Highway Administration of the U.S. Department of Transportation on the continuing operation of the Long-Term Pavement Performance (LTPP) studies and on the development and deployment of the Superpave®

system of hot-mix asphalt materials mixture design. The Special Programs Division also supports a committee of analysts from the United States and abroad that convenes twice each year for informal, critical discussion of analytical research involving LTPP data and other data on pavement performance.

### IDEA PROGRAMS

IDEA programs fund initial investigations of concepts that have potential for leading to breakthroughs in transportation technology. The small projects initiated by researchers test the feasibility of innovative concepts in general areas of interest to the transportation community. IDEA programs sponsor high-risk research that is independent of



**Victor M. Mendez**  
*Chair*  
Long-Term Pavement  
Performance  
Committee



**Joseph A. Mickes**  
*Chair*  
TRB Superpave  
Committee



**Ray D. Pethel**  
*Chair*  
Transportation Safety  
Technology IDEA  
Committee



**Carol A. Murray**  
*Chair*  
NCHRP Highway  
IDEA Panel



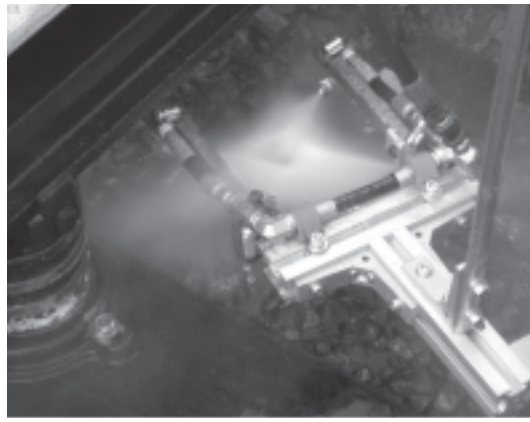
**Fred Gilliam**  
*Chair*  
Transit IDEA Panel



**Mike Franke**  
*Chair*  
Committee for the  
High-Speed Rail  
IDEA Program



**Neil F. Hawks**  
*Director*  
Special Programs



Trakleaner, an automated cleaning technology for third-rail insulators in rail rapid transit systems, is under development through Transit IDEA Project 36.

the immediate mission concerns of public agencies and of the short-term financial imperatives of the private sector.

Through the National Cooperative Highway Research Program (NCHRP), state departments of transportation collectively fund an IDEA program for highway-related research. This year, the top funding level for NCHRP IDEA projects was raised to \$150,000, with highway infrastructure security as the high-priority topic.

Research on innovations to advance transit practice is carried out under the Transit IDEA program, funded by the Federal Transit Administration through the Transit Cooperative Research Program. A growing number of projects focus on transit security, safety, and emergency preparedness—areas of high interest. Several transit agencies are participating in Transit IDEA projects by testing prototypes and providing technical and practical guidance. Other focus areas for transit research projects are increasing ridership, improv-

ing capital and operating efficiencies, and promoting energy independence.

The Federal Railroad Administration (FRA) sponsors the High-Speed Rail (HSR) IDEA program, which focuses on upgrading high-speed rail technology. More than half of the 14 HSR IDEA projects have received substantial contributions from railroad industry organizations, such as the Association of American Railroads, as well as from rail companies.

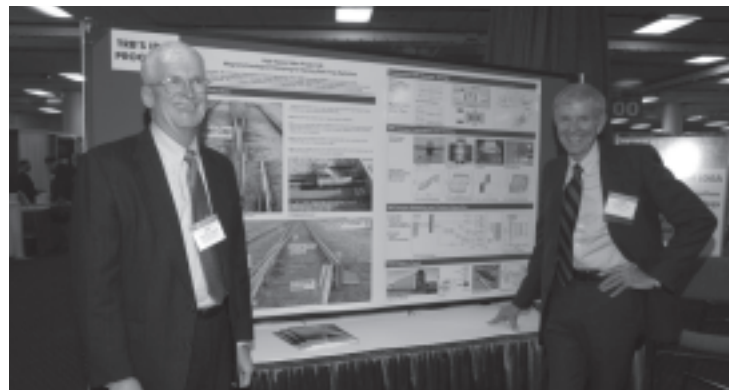
The Safety IDEA program, under the sponsorship of the Federal Motor Carrier Safety Administration (FMCSA) and FRA, funds innovative projects to improve the safety of truck, intercity bus, and railroad operations. Areas of investigation include railroad and commercial truck vehicles, operator performance, and railroad grade crossings. As of September 2005, the Safety IDEA program committee had selected 10 projects for funding: three are completed, six are under way, and one is in negotiation.

Collaboration between IDEA sponsors sometimes occurs at the project level. For example, the Hillman hybrid composite bridge beam—an innovative system for building lightweight, high-strength, and cost-competitive bridges—has attracted interest from the rail and highway communities. With joint funding from the HSR and NCHRP IDEA programs, the project has completed a successful, full-scale laboratory test of a 30-foot beam and will move to testing at the Transportation Technology Center in Pueblo, Colorado, or on a railroad.

The IDEA programs all have the same general administrative structure, with adaptations for sponsorship arrangements and target audiences. Each program operates through a committee or



James Skaggs, International Electronic Machines Corporation, describes progress on Transit IDEA Project 43, Portable Electronic Wheel Gage, which uses 3-D imaging and electromagnetic sensing to improve commuter rail passenger safety and ride quality.



High-Speed Rail IDEA Project 46, Magnetorheological Damping for Spring Rail Frog Switches, was the subject of an Annual Meeting poster presentation by principal investigator Les Olson (*left*), with program consultant Chuck Taylor.



At the Safety IDEA Committee Meeting in January, (left to right) Neil Hawks, TRB Special Programs Division Director; Claire Orth, Federal Railroad Administration; and Margaret Sullivan, Paccar Technical Center, discuss the evaluation and selection of proposals.

panel of volunteer transportation experts who solicit, review, and select proposals that merit research contracts.

Because IDEA projects are high-risk investigations of unproved concepts, funds awarded to any one project are usually less than \$100,000. Frequently, however, cost-share arrangements augment the IDEA funds, nearly doubling the research support.

A 2005 survey of IDEA investigators revealed that of the 206 completed contracts, research and development work continued on nearly half, supported by an additional \$20 million in follow-on funding from other sources. Products from 29 projects are now available to the transportation community and another 51 proven concepts are in various stages of development.

An annual summary of completed and current projects is published for each of the IDEA programs and distributed at the TRB Annual Meeting. These summaries also are available on the IDEA page of the TRB website, along with the IDEA Program Announcement, which contains forms and guidelines for submitting proposals.<sup>1</sup>

A quarterly publication, *Ignition*, features interviews with IDEA investigators and transportation leaders and highlights the plans and progress of promising projects. Issues of *Ignition* are posted on the IDEA website.<sup>2</sup>

## RESEARCH PROGRAM REVIEW COMMITTEES

The long-standing TRB Superpave Research Program Committee, requested by the Transportation

Equity Act for the 21st Century and administered by the Special Programs Division, concluded its work in 2005. A second advisory group, the TRB Long-Term Pavement Performance (LTPP) Committee, received funding to continue its work. Both committees have served to monitor, review, and advise the conduct of pavement research and technology programs.

With the enactment of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, additional research and technology review committees are likely to begin in 2006.

### Long-Term Pavement Performance

The goal of LTPP is to conduct a series of rigorous, long-term field experiments on in-service highways. This requires providing researchers with the data, analysis tools, and analytical results that will facilitate the discovery of the physical relationships governing the long-term performance of highway pavements. The TRB LTPP Committee, assisted by specialized expert task groups, provides general guidance to the Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) on planning, operations, and technical oversight throughout the 20-year span of these studies.

The committee and the expert task groups advise FHWA and AASHTO on the collection of pavement performance data, analyses of the data, and the design and development of products to convert LTPP findings into practical applications. The Expert Task Group on LTPP Data Analysis, for example, provides peer review of analytical



Hillman composite bridge beam is prepared for testing under a project funded by NCHRP IDEA and High-Speed Rail IDEA.

<sup>1</sup> [www.TRB.org/idea](http://www.TRB.org/idea).

<sup>2</sup> [www.TRB.org/news/blurp\\_browse.asp?id=29](http://www.TRB.org/news/blurp_browse.asp?id=29).



The cover of the Winter 2005 *Ignition* shows the Norfolk Southern Railroad test site for Safety IDEA Project 6, to detect the lateral instability of rail wheel sets, also known as truck hunting.

research initiatives. In turn, the committee uses the expert task group findings to develop recommendations for additional research to achieve the program's long-term goals.

Other expert task groups monitor LTPP operational functions, including the collection of data on traffic, pavement distress and profiles, and materials. Additional expert task groups are established as technical issues arise.

Another group managed by the Special Programs Division applies a less formal approach to encourage the use of pavement performance data—including data from LTPP—to develop insights into the type, rate, and extent of pavement deterioration over time as a result of traffic loading and the environment. The Data Analysis Working Group—affectionately called “the DAWG” by participants—provides an international forum for researchers to discuss pavement performance data analysis projects and to exchange new techniques for analyzing the data.

At the DAWG forums, researchers relate experiences from active analytical projects. At the conclusion of each presentation, the speaker answers questions from the audience and asks for suggestions about ways to overcome barriers or about alternative approaches to the analysis.

The DAWG met in January in Washington, D.C., in conjunction with the TRB Annual Meeting, and in June in Trondheim, Norway, in association with the Seventh International Conference on the Bearing Capacity of Roads, Railways, and Airfields.

## Superpave

The Superpave deployment program was jointly funded and managed by FHWA and AASHTO, through NCHRP. The TRB Superpave Committee, organized at the request of AASHTO and FHWA, monitored implementation, recommended annual work programs, and provided a forum for industry and academia to participate in developing and deploying the Superpave system.

Assisted by expert task groups—on mixtures, on aggregates and binders, and on communications—the committee advised the AASHTO Standing Committee on Research about potential Superpave-related research and development projects to be funded through NCHRP. The committee also monitored the progress of Superpave research and development conducted by FHWA.

Since its first meeting in March 1999, the committee has issued 12 advisory letter reports and developed a long-range plan to help bring Superpave development and deployment to a logical conclusion.<sup>3</sup> In 2005, final recommendations, findings, and a brief analysis of the technology transfer activities that helped move Superpave into mainstream practice were published in the committee's final report, *Superpave: Performance by Design*.<sup>4</sup> NCHRP Project 9-42, begun in August, will document the techniques that contributed to the successful implementation of the technology nationwide.

<sup>3</sup> [www.TRB.org/publications/sp/superpave\\_final\\_letter\\_11.pdf](http://www.TRB.org/publications/sp/superpave_final_letter_11.pdf).

<sup>4</sup> [www4.TRB.org/trb/dive.nsf/web/Superpave?OpenDocument](http://www4.TRB.org/trb/dive.nsf/web/Superpave?OpenDocument).





# ADMINISTRATION AND FINANCE

The TRB Administration and Finance Division provides financial, technology, and administrative support for TRB staff; financial oversight of the contracts and grants that support the work of TRB; expenditure controls; administration of publications sales and distribution; maintenance of the benefits and services for sponsor and affiliate organizations; and liaison to the administrative and financial offices of the National Academies.

## FINANCIAL MANAGEMENT

The division manages the contracts and grants that support TRB's work, prepares budgets for continuing operations and individual projects, and controls expenditures. TRB's total income and expenditures have increased consistently year by year to more than \$55 million. A statement of income and expenditures appears on pages 48–49.

## AFFILIATE AND SPONSOR SERVICES

TRB's core technical activities have five levels of support: student affiliates, individual affiliates, organizational affiliates, sustaining affiliates, and sponsors. All affiliates and sponsors contribute to the support of TRB activities through annual fees determined by the level of services selected.

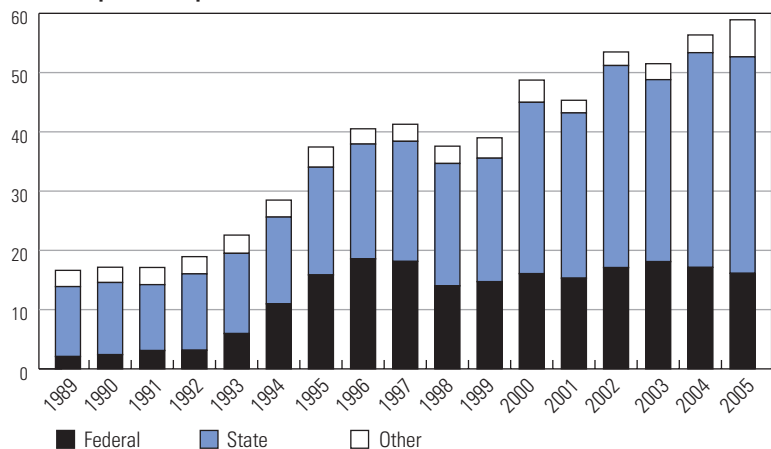
Individual and student affiliate benefits include reduced registration fees for the TRB Annual Meeting, a complimentary subscription to TR News, discounts on most TRB books and reports, use of the TRB library, and assistance with TRB's computer-based information services. Individual and student affiliates also may subscribe to publications at a substantially reduced rate through a selective distribution program.

Organizational affiliates include government agencies, academic organizations, private organizations, and consultants committed to the



**Michael P. LaPlante**  
Director  
Administration and  
Finance

TRB Expenditures per Year (in millions of dollars)



CY 2005 data use actual income and expenditures for the first 3 quarters, and an estimate for the 4th quarter.

## STATEMENT OF INCOME AND EXPENDITURES

Calendar Years 2004 and 2005

	CY 2004 (Actual)	CY 2005 (Projected) <sup>a</sup>
<b>Sources of Income</b>		
<b>Core Technical Activities; Special Continuing Programs; and Studies, Conferences, and Workshops</b>		
State Transportation Departments	7,510,398	6,305,000
Federal Highway Administration	4,690,946	3,485,000
Research and Innovative Technology Administration	884,303	627,000
Federal Railroad Administration	439,628	1,060,000
Robert Wood Johnson Foundation	356,900	38,000
Federal Transit Administration	354,924	330,000
Federal Motor Carrier Safety Administration	304,923	1,040,000
Great Lakes Protection Fund	252,265	80,000
Federal Aviation Administration	193,269	165,000
U.S. Coast Guard	173,829	100,000
National Highway Traffic Safety Administration	100,736	530,000
Government Accountability Office	84,517	0
U.S. Army Corps of Engineers	73,241	60,000
National Aeronautics and Space Administration	60,000	60,000
Association of American Railroads	60,000	60,000
American Transportation Research Institute	60,000	60,000
American Public Transportation Association	60,000	60,000
U.S. Navy	56,756	65,000
U.S. Environmental Protection Agency	45,000	60,000
Metropolitan Washington Council of Governments	30,243	0
U.S. Department of Energy	30,000	30,000
Minerals Management Service	25,000	25,000
National Oceanographic and Atmospheric Administration	25,000	25,000
National Transportation Safety Board	15,000	0
Maritime Administration	5,035	10,000
International Joint Commission	0	23,000
The National Academies	57,560	47,000
Miscellaneous	34,281	50,000
Affiliates, Registration, Royalties, and Publication Sales	2,148,626	5,320,000
<b>Subtotal</b>	<b>\$18,132,380</b>	<b>\$19,715,000</b>
<b>Cooperative Research Programs</b>		
State Transportation Departments	\$28,715,204	\$30,220,000
Federal Highway Administration	1,582,814	\$730,000
Federal Transit Administration	7,895,437	\$7,725,000
Publication Sales and Other	20,405	\$75,000
<b>Subtotal</b>	<b>\$38,213,860</b>	<b>\$38,750,000</b>
<b>Total TRB Income</b>		
State	\$36,237,709	\$36,525,000
Federal	17,125,842	\$16,127,000
Other	2,982,689	\$5,813,000
<b>Total</b>	<b>\$56,346,240</b>	<b>\$58,465,000</b>
<b>Sources of Expenditures</b>		
<b>Expenditures by Major Cost Category</b>		
Salaries (including fringe benefits)	\$10,073,942	\$10,535,000
Travel and Meetings	3,290,827	\$3,440,000
Consultants and Contracts	26,376,613	\$27,575,000
Abstracting, Indexing, and Publishing	2,161,398	\$2,260,000
Other Direct Costs	1,742,493	\$1,820,000
Indirect Costs	12,705,967	\$13,280,000
<b>Subtotal</b>	<b>\$56,351,240</b>	<b>\$58,910,000</b>

	CY 2004 (Actual)	CY 2005 (Projected) <sup>a</sup>
<b>Expenditures by Major Activity</b>		
<b>Core Technical Activities</b>		
Committee Activities and Field Visits	\$5,771,417	\$5,695,000
Annual Meeting	1,412,106	\$1,395,000
Library and Transportation Research Information Services	1,453,627	\$1,435,000
Publications	3,008,795	\$2,970,000
<b>Subtotal</b>	<b>\$11,645,945</b>	<b>\$11,495,000</b>
<b>Special Continuing Programs</b>		
Pavement Program Review Committees and Activities	\$539,010	\$675,000
Innovations Deserving Exploratory Analysis	2,937,121	3,225,000
Synthesis Studies	1,801,054	2,035,000
Legal Studies	267,095	285,000
Research and Technology Coordinating Committee	434,170	430,000
Marine Board Core Program	266,420	205,000
<b>Subtotal</b>	<b>\$6,244,870</b>	<b>\$6,855,000</b>
<b>Studies, Conferences, and Workshops</b>	<b>\$4,315,630</b>	<b>\$5,215,000</b>
<b>Cooperative Research Programs</b>		
National Cooperative Highway Research Program		
Technical Direction, Reports, and Panels	\$5,654,945	\$5,770,000
Research	21,823,010	22,265,000
<b>Subtotal</b>	<b>\$27,477,955</b>	<b>\$28,035,000</b>
Transit Cooperative Research Program		
Technical Direction, Reports, and Panels	\$1,879,558	\$2,060,000
Research	4,787,282	5,250,000
<b>Subtotal</b>	<b>\$6,666,840</b>	<b>\$7,310,000</b>
<b>Subtotal, Cooperative Research Programs<sup>b</sup></b>	<b>\$34,144,795</b>	<b>\$35,345,000</b>
<b>Total TRB Expenditures</b>		
State	\$36,237,709	\$36,525,000
Federal	\$17,125,842	\$16,127,000
Other	\$2,987,689	\$6,258,000
<b>Total</b>	<b>\$56,351,240</b>	<b>\$58,910,000</b>

#### SPECIAL FUND

Fund balance, end of previous fiscal year	\$6,010,150	\$6,005,150
Plus (minus) current fiscal year income over (under) expenditures	-5,000	-445,000
Balance, current fiscal year	<b>\$6,005,150</b>	<b>\$5,560,150</b>

In 1965 the TRB Executive Committee approved a reserve fund to provide for orderly adjustments in the event of a temporary shortfall in anticipated revenues for TRB Technical Activities. This fund, built up over the years from surplus income in excess of expenditures from nonfederal sources for any one fiscal year, is reserved for expenditures in excess of income for any later fiscal year under a fixed budget approved triennially by the TRB Executive Committee.

<sup>a</sup> CY 2005 data use actual income and expenditures for the first 3 quarters, and an estimate for the 4th quarter.

<sup>b</sup> The total expenditure shown for the Cooperative Research Programs (CRP) is lower than the total revenue shown for the CRP because some expenditures are included in CRP-supported activities under TRB's Special Continuing Programs and Studies, Conferences, and Workshops.



Customer Service Supervisor Makeeya Hazelton responds to a telephone inquiry about book orders; staff also handle orders placed via the online bookstore, by mail and fax orders, and through referrals from the National Academies Press Bookstore in the lobby of the Keck Center.

advancement of knowledge about the nature and performance of transportation systems and system components. In addition to the range of benefits that individual affiliates receive, organizational affiliates receive most publications at no cost, as well as complimentary registrations for the TRB Annual Meeting. Contributions for organizational affiliates range from \$2,650 to \$6,600, depending on the level of benefits selected.

Sustaining affiliates are agencies and organizations, including individual corporations and businesses, that support TRB at a level considerably higher than the direct cost of the services and publications received. The minimum annual contribution is \$15,000.

Sponsors are the major source of financial support for TRB's core technical activities. Federal, state, and local government agencies and professional societies and organizations that represent industry groups are eligible to be TRB sponsors. Fees and services are negotiated to serve the sponsor's needs and to provide fundamental support for the Board's programs and activities of interest to the entire transportation community. The minimum annual sponsor fee is \$60,000. Sponsors are also represented on the TRB Executive Committee. (See pages 56–57 for a list of TRB sponsors and sustaining affiliates.)

## WEB AND STRATEGIC APPLICATIONS

The TRB website, [www.TRB.org](http://www.TRB.org), was upgraded significantly in 2005, to facilitate user access to transportation news and information.

Authorized users now can access peer-reviewed papers published since 1996 in the *Transportation Research Record: Journal of the Transportation Research Board*.<sup>1</sup> The password-protected Internet database allows searches for papers by keyword, author, topic area, and journal volume number. The service is open to committee chairs, employees of sponsoring agencies, and authors of Annual Meeting papers. TRB is working to allow access by organizational and individual affiliates.

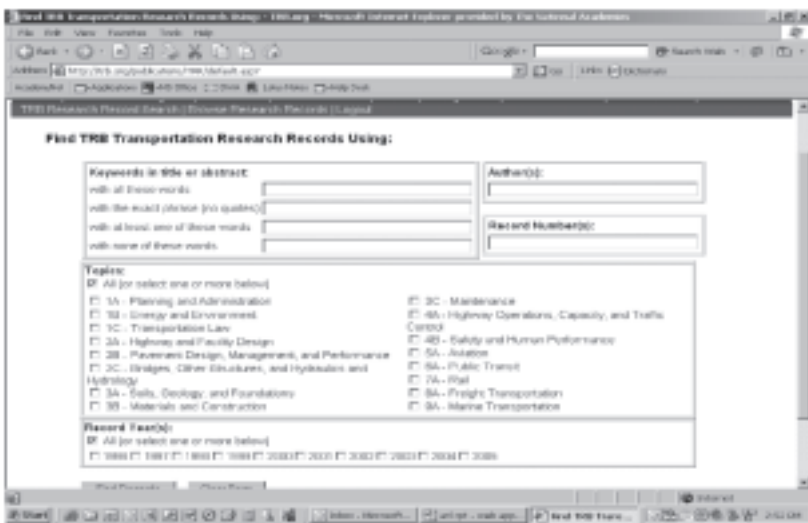
Also implemented were many behind-the-scenes improvements to the website. New high-speed web servers now support a more robust search capability, allowing for easier navigation of the website and quicker access to information. The servers also constitute a more stable platform for establishing a portal-like environment that will enable visitors to customize their preferred pathways within the website.

## PUBLICATIONS SALES AND DISTRIBUTION

TRB's timely distribution of publications disseminates transportation research and technology results worldwide. TRB also releases many publications—some exclusively—in electronic format.

TRB distributes and maintains an inventory of publications that report on the results of research supported by the Strategic Highway Research Program. A list of TRB publications issued from January 1 through December 31, 2005, appears on pages 52–54.

<sup>1</sup> [www.TRB.org/publications/TRR](http://www.TRB.org/publications/TRR).



The password-protected web page for TRB's journal allows searches by keyword, author, volume number, topic, and year of publication for papers published since 1996.

## STAFF NEWS

- Joining the Administration and Finance Division staff were **Kelvin R. Jordan**, Affiliates Coordinator; **Jessica R. Wu**, Customer Service Representative; and **Eric A. Grim**, Programmer Analyst.
- **Makeeya Hazelton** was promoted to Supervisor, Customer Service.



# TRB CONFERENCES AND WORKSHOPS

JANUARY 1, 2005–DECEMBER 31, 2005

## JANUARY

- 9–13 TRB 84th Annual Meeting
- 31 Aviation Environmental Portfolio Management Tool Workshop

## MARCH

- 23–24 Future Truck and Bus Safety Research Opportunities Conference

## APRIL

- 4–5 17th Biennial Symposium on Visibility and Traffic Control Devices
- 13–15 International Conference on Best Practices for Ultrathin and Thin Whitetoppings\*
- 18–20 12th International High Occupancy Vehicle Systems Conference: Improving Mobility and Accessibility with Managed Lanes, Pricing, and Bus Rapid Transit
- 24–28 2005 Transportation Planning Applications Conference
- 27 Performance-Based Maintenance Contracting for Executive Officers: Strategic Innovations

## MAY

- 3 Aggregates for Highway Construction: Characterization and Performance
- 8–11 International Workshop on Life-Cycle Cost Analysis and Design of Civil Infrastructure Systems\*
- 11–13 Census Data for Transportation Planning: Preparing for the Future
- 22–25 National Roundabout Conference

## JUNE

- 6–9 Southwest Community Impact Assessment Workshop\*
- 20–21 Drugs in Traffic Workshop
- 20–21 Bus Rapid Transit Research Agenda Workshop
- 20–24 7th International Symposium on Utilization of High-Strength, High-Performance Concrete\*
- 27–30 3rd International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design\*
- 27–July 2 3rd International Symposium on Highway Geometric Design

## JULY

- 7–9 7th Rail Passenger Caucus
- 8–9 Commodity Flow Survey Conference
- 10–12 30th Annual Summer Ports, Waterways, Freight, and International Trade Conference
- 10–12 TRB 2005 Summer Conference
- 10–12 Stormwater Management for Highways Symposium
- 17–19 Environmental Stewardship in Transportation Through Waste Management, Materials Reuse, and Environmental Management Systems

- 17–20 6th International Bridge Engineering Conference: Reliability, Security, and Sustainability in Bridge Engineering
- 17–20 44th Annual Workshop on Transportation Law
- 18–20 TRB Noise and Vibration Summer Meeting and Conference

## AUGUST

- 13–18 8th International Conference on Concrete Pavements\*

## SEPTEMBER

- 9 National Airspace System Infrastructure Management Conference\*
- 11–14 Environmental Stewardship and Streamlining: Fact or Fiction\*
- 11–14 Northeast Community Impact Assessment Workshop\*
- 15–16 Investing in Human Capital: Selection, Training, and Work Socialization in the Railroad Industry
- 18–21 Workshop on Traffic Modeling: Traffic Behavior and Simulation\*
- 22–23 Role of the Driver in Vehicle–Infrastructure Integration and Cooperation: Research Needs Workshop
- 22–24 International SIIV Congress: People, Land, Environment, and Transport Infrastructures\*
- 28 Vehicle Inventory and Use Survey Data User Workshop
- 29–30 Aviation Forecast Assumption Workshop: Part 1, Airline Forecast Workshop

## OCTOBER

- 2–4 SmartRiver21: International Symposium on Global Commerce and Strategies for Inland Navigation and Economic Development
- 5–7 Road Safety on Four Continents
- 18–19 Aviation Forecast Assumption Workshop: Part 2, Business and General Aviation Forecast Workshop
- 31–Nov. 1 1st National Conference on Roadway Pavement Preservation

## NOVEMBER

- 1–3 6th National Conference on Transportation Asset Management: Making Asset Management Work in Your Organization\*
- 2–4 Marine Board Fall Meeting and 40th Anniversary Commemoration
- 14–16 2005 International Truck and Bus Safety Security Symposium\*

## DECEMBER

- 8–9 Data Requirements in Transportation Reauthorization Legislation Conference

\*TRB is cosponsor of the meeting.

# TRB PUBLICATIONS

## Transportation Research Records

- 1901 Bituminous Binders 2005
- 1902 Transportation and Land Development 2005
- 1903 Transit: Bus, Rural Public and Intercity Bus, and Paratransit
- 1904 Highway Facility Design
- 1905 Pavement Rehabilitation, Strength and Deformation Characteristics, and Surface Properties 2005
- 1906 Freight Analysis, Evaluation, and Modeling; Including 2005 Thomas B. Deen Distinguished Lecture
- 1907 Construction 2005
- 1908 Statistical Methods; Highway Safety Data, Analysis, and Evaluation; Occupant Protection; Systematic Reviews and Meta-Analysis
- 1909 Inland Waterways; Ports and Channels; and the Marine Environment
- 1910 Intelligent Transportation Systems and Vehicle-Highway Automation 2005
- 1911 Maintenance Management and Operations Services
- 1912 Geometric Design and the Effects on Traffic Operations 2005
- 1913 Geology and Properties of Earth Materials 2005
- 1914 Concrete Materials 2005
- 1915 Airports, Airspace, and Passenger Management
- 1916 Railroads: Intercity Rail Passenger; Track Design and Maintenance; and Other Topics
- 1917 Data Initiatives
- 1918 Traffic Control Devices, Visibility, and Rail-Highway Grade Crossings 2005
- 1919 Rigid and Flexible Pavement Design 2005
- 1920 Highway Capacity and Quality of Service 2005
- 1921 Travel Demand 2005
- 1922 Safety: Older Drivers; Traffic Law Enforcement; Management; School Transportation; Emergency Evacuation; Truck and Bus; and Motorcycles
- 1923 Network Modeling 2005
- 1924 Management and Public Policy 2005
- 1925 Freeway Operations, High-Occupancy Vehicle Systems, Traffic Signal Systems, and Regional Transportation Systems Management 2005
- 1926 Travel Behavior and Values 2005
- 1927 Transit: Planning, Management and Maintenance, Technology, Marketing and Fare Policy, and Capacity and Quality of Service Design of Structures 2005
- 1928 Design of Structures 2005
- 1929 Bituminous Paving Mixtures 2005
- 1930 Transit: Intermodal Transfer Facilities, Rail, Commuter Rail, Light Rail, and Major Activity Circulation Systems
- 1931 Planning and Analysis 2005
- 1932 Finance, Economics, and Economic Development 2005
- 1933 Preservation of Roadway Structures and Pavements
- 1934 Traffic Flow Theory 2005
- 1935 Information Systems and Technology
- 1936 Soil Mechanics 2005
- 1937 Human Performance; Simulation and Visualization
- 1938 Security
- 1939 Bicycles and Pedestrians; Developing Countries 2005
- 1940 Pavement Management; Monitoring, Evaluation, and Data Storage; and Accelerated Testing 2005
- 1941 Energy and Environmental Concerns 2005

## Transportation Research Record CD-ROM

- 11 6th International Bridge Engineering Conference: Reliability, Security, and Sustainability in Bridge Engineering; July 17-20, 2005

## Special Reports<sup>1</sup>

- 282 Does the Built Environment Influence Physical Activity? Examining the Evidence
- 283 Cooperative Research for Hazardous Materials Transportation: Defining the Need, Converging on Solutions

## Conference Proceedings<sup>1</sup>

- 32 Smart Growth and Transportation: Issues and Lessons Learned; Report of a Conference
- 33 Transportation Finance: Meeting the Funding Challenge Today, Shaping Policies for Tomorrow
- 34 International Perspectives on Road Pricing
- 35 Research on Women's Issues in Transportation, Volume 2: Technical Papers
- 36 Performance Measures to Improve Transportation Systems

## Conference Proceedings on the Web (online)

- 2 Safe Mobility for Older Americans

## Letter Reports (online)

- Committee on Developing Aviation Environmental Design and Aviation Environmental Portfolio Management Tools, April 20, 2005, and May 25, 2005
- Committee for Review of the Federal Railroad Administration Research, Development, and Demonstration Programs, June 2, 2005
- Committee for Review of Oregon Department of Transportation Study on Bridge Shear, July 11, 2005
- Research and Technology Coordinating Committee (Federal Highway Administration), January 14, 2005; May 2, 2005; and June 30, 2005
- Transit Research Analysis Committee, June 2, 2005
- TRB Superpave Committee, April 8, 2005
- TRB Long-Term Pavement Performance Committee, April 5, 2005, and August 16, 2005

## Transportation Research E-Circulars (online)

- 71 Data for Understanding Our Nation's Travel: National Household Travel Survey Conference
- 72 Implementing Impaired Driving Countermeasures: Putting Research into Action—A Symposium
- 73 Performance Measures to Improve Transportation Planning Practice: A Peer Exchange
- 74 Glossary of Highway Quality Assurance Terms: Third Update
- 75 Statewide Travel Demand Modeling: A Peer Exchange
- 76 Asset Management in Planning and Operations: A Peer Exchange
- 77 Enhancing the Value of Data Programs: A Peer Exchange
- 78 Roadway Pavement Preservation 2005: Papers from the First National Conference on Pavement Preservation
- 79 Calibration to Determine Load and Resistance Factors for Geotechnical and Structural Design
- 80 Freight Data for State Transportation Agencies

- 81 Research Program for Improvement of the Highway Capacity Manual
- 82 Statewide Multimodal Transportation Planning Proceedings: 2004 Peer Exchange
- 83 National Roundabout Conference: Proceedings
- 86 Evaluation of Chemical Stabilizers: State-of-the-Practice Report

**TR News**

Nos. 236—241

**Online Newsletters**

Intercity Rail Passenger Systems, No. 11  
 TRB Transportation Research Electronic Newsletter

**TRB Miscellaneous Publications**

Superpave: Performance by Design

**National Cooperative Highway Research Program (NCHRP) Reports<sup>2</sup>**

- 500 Guidelines for Implementation of the AASHTO Strategic Highway Safety Plan
  - Volume 14: A Guide for Reducing Crashes Involving Drowsy and Distracted Drivers
  - Volume 15: A Guide for Enhancing Rural Emergency Medical Services
  - Volume 16: A Guide for Reducing Alcohol-Related Collisions
  - Volume 17: A Guide for Reducing Work Zone Collisions
- 525 Surface Transportation Security
  - Volume 3: Incorporating Security into the Transportation Planning Process
  - Volume 4: A Self-Study Course on Terrorism-Related Risk Management of Highway Infrastructure (on CD-ROM)
  - Volume 5: Guidance for Transportation Agencies on Managing Sensitive Information
  - Volume 6: Guide for Emergency Transportation Operations
  - Volume 7: System Security Awareness for Transportation Employees (on CD-ROM)
  - Volume 8: Continuity of Operations Planning (COOP) Guidelines for Transportation Agencies
- 535 Predicting Air Quality Effects of Traffic-Flow Improvements: Final Report and User's Guide
- 536 From Handshake to Compact: Guidance to Foster Collaborative, Multimodal Decision Making (with supplemental material CD-ROM)
- 537 Recommended Guidelines for Curb and Curb-Barrier Installations
- 538 Traffic Data Collection, Analysis, and Forecasting for Mechanistic Pavement Design
- 539 Aggregate Properties and the Performance of Superpave-Designed Hot-Mix Asphalt
- 540 Guidelines for Early-Opening-to-Traffic Portland Cement Concrete for Pavement Rehabilitation
- 541 Consideration of Environmental Factors in Transportation Systems Planning
- 542 Evaluating Cultural Resource Significance: Implementation Tools (with supporting material on two CD-ROMs)
- 543 Effective Slab Width for Composite Steel Bridge Members (with appendixes on CD-ROM)
- 544 Environmentally Sensitive Channel- and Bank-Protection Measures (with supporting material and software on CD-ROM)
- 545 Analytical Tools for Asset Management (with supporting materials on CD-ROM and Users Guides)
- 546 Incorporating Safety into Long-Range Transportation Planning
- 547 Simple Performance Tests: Summary of Recommended Methods and Database (with CD-ROM)
- 548 A Guidebook for Including Access Management in Transportation Planning
- 549 Simplified Shear Design of Structural Concrete Members

**NCHRP Syntheses of Highway Practice<sup>2</sup>**

- 339 Centerline Rumble Strips
- 341 Integrated Roadside Vegetation Management
- 342 Chip Seal Best Practices
- 343 Management of Disadvantaged Business Enterprise Issues in Construction Contracting
- 344 Winter Highway Operations
- 345 Steel Bridge Erection Practices
- 346 State Construction Quality Assurance Programs
- 347 Managing Archaeological Investigations
- 348 Improving the Safety of Older Road Users
- 349 Developing Transportation Agency Leaders
- 350 Crash Records Systems
- 351 Access Rights
- 352 Value Engineering Applications in Transportation
- 353 Comprehensive Investigation of Bridges with Fracture Critical Details
- 354 Inspection and Maintenance of Cable-Stayed Systems
- 355 Transportation Technology Transfer: Successes, Challenges, and Needs

**NCHRP Research Results Digests<sup>2</sup>**

- 294 Transit-Oriented Development: Developing a Strategy to Measure Success
- 295 Availability and Accessibility of Liability and Excess Insurance for Public Transit and Private Coach Operators
- 296 Comprehensive Human Factors Guidelines for Road Systems
- 297 New Facility for Calibrating Retroreflectometers
- 298 Use of Event Data Recorder Technology for Highway Crash Data Analysis
- 299 Crash Reduction Factors for Traffic Engineering and ITS Improvements
- 300 Outcomes of the Environmental Streamlining Pilot Projects

**NCHRP Web Documents (online)**

- 70 Comprehensive Human Factors Guidelines for Road Systems
- 71 Precision Estimates for AASHTO Test Method T308 and the Test Methods for Performance-Graded Asphalt Binder in AASHTO Specification M320
- 72 National Calibration Facility for Retroreflective Traffic Control Materials
- 73 Emergency Transportation Operations: Volume 6: Resources Guide for NCHRP Report 525, Volume 6
- 74 LTPP Data Analysis: Influence of Design and Construction Features on the Response and Performance of New Flexible and Rigid Pavements
- 75 Use of Event Data Recorder (EDR) Technology for Highway Crash Data Analysis
- 76 Final Report for Early-Opening-to-Traffic Portland Cement Concrete for Pavement Rehabilitation
- 77 Consideration of Environmental Factors in Transportation Skills Planning—Appendixes
- 78 Appendix Material for NCHRP Report 549
- 79 Monitoring, Analyzing, and Reporting on Environment Streamlining Pilot Project

**Transit Cooperative Research Program (TCRP) Reports<sup>3</sup>**

- 71 Track Related Research
  - Volume 4: Friction Control Methods Used by the Transit Industry
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### Commercial Truck and Bus Safety Synthesis Program (CTBSSP) Synthesis Reports<sup>3</sup>

- 6 Operational Differences and Similarities Among the Motorcoach, School Bus, and Trucking Industries
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